Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC

In the matter of:	)	
	)	
Amendments of Part 73 and 74 to Improve the	)	MB Docket 19-193
Low Power FM Radio Service Technical	)	
Rules	)	
	)	
Modernization of Media Regulation Initiative	)	MB Docket 17-105

REPLY COMMENTS OF REC NETWORKS

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I. INTRODUCTION

1. As Low Power FM (LPFM) will soon celebrate its 20-year anniversary as a radio service, we now have a service that has "come of age" and is making positive impacts in the communities that LPFM stations serve. 20 years ago, the Commission wanted the service to be "easy" and made it simple for existing nonprofit organizations to be able to add radio to their educational programs. We are now 20 years since the service began and while other radio services have advanced over that time, LPFM has been left in the corner with many of its disparities from a time past. During the past 20 years, an entire community has evolved around the service including those who support the service from an engineering standpoint. During the past 20 years, we have seen the LPFM community develop engineering (contour) software that rivals commercial software such as V-Soft and ComStudy, which could cost tens of thousands of dollars to implement. During these past 20 years, we have seen a few incredible stories of AM stations coming back to life through the use of FM translators.

2. Despite the few successes with AM Revitalization, we have also seen what can be seen as a form of spectrum gentrification take place within this 100-room building that we call FM and with that, we have spectrum that has been just set aside for the sake of LPFM simplicity. We also have a national organization, who in their attempt to defend their membership's desire to be the monopolistic voice within their "turf" has used deception, especially towards decisionmakers who lack broadcast engineering knowledge in order to silence new voices from having a small piece of the pie. They have also painted LPFM operators as being inexperienced, stupid and not able to follow the rules; all while turning a blind eye to what's going on inside their own back yard.

3. On the other side, we have many LPFM advocates and supporters, some who like REC Networks (REC), have been around for the full 20 years and then some fighting to get the service to finally be able to grow despite the ongoing temper tantrums of the National Association of Broadcasters (NAB). It's time for the voices of REC, the LPFM Engineers, Steven White and Jeff Sibert to be heard and taken seriously. These are the people who have dedicated a good portion of their lives to this service and unlike past groups such as Amherst Alliance, they actually touch LPFM stations on a daily basis. Their voices deserve to be heard.

4. In these *Reply Comments*, we mirror and expand on the thoughts expressed by the other LPFM supporters and at the same time, we address the misunderstandings that some have to certain aspects to the NPRM and expose the 20 year cycle of deception that is distracting from the bigger issue that impacts all

of radio. Well also renew our call for the Commission to advance LP-250[1], FM translator relief[2] and LPFM short-spacing[3], which were some of the items that the Commission "tentatively rejected" in the NPRM.[4]

II. THE RECORD CLEARLY SHOWS THAT LP-250, FM TRANSLATOR RELIEF AND LPFM SHORT-SPACING SHOULD BE ADVANCED AS A *FURTHER NOTICE OF PROPOSED RULEMAKING*.

A. What comes around, goes around at the NAB

5. The more and more the NAB takes action, the more and more it is clearly showing that the argument that LP-250 and just LPFM in general is going to cause this massive amount of interference is nothing more than just a ruse:

The digital conversion myth – The Commission was originally misled by NAB with gloom and doom stories about LPFM was going to destroy the "digital conversion" of radio.[5] 20 years later, the "conversion" has been lackluster with stations not desiring to convert, many can't afford to convert, a consumer electronics industry not interested in making the radios and thus IBOC has been relegated to an over glorified studio-to-transmitter link for feeding translators. Now, FM stations of all classes are being hit with adjacent channel interference from digital sidebands and the "hijacking" of signals of non-IBOC stations by the digital sidebands of distant stations. 2,700 LPFM stations later and NAB's fears have been declared long unfounded.

The third adjacent channel deception – Those of us who have been around for quite awhile remember the falsehoods that were raised prior to the passage of the Radio Broadcast Protection Act of 2000.[6] NAB lobbyists mislead Congress of the "dangers" of "harmful" interference caused by LPFM stations operating on third-adjacent channels of full-service stations. The NAB lobbyists went so far as to provide a deceptive audio compact disc that contained "simulations" of what would happen to local DC area broadcast stations if the FCC was to allow third-adjacent channel LPFM.[7] Of course, when the MITRE Report[8] justified the

[1] REC Comments at ¶¶ 41-67. We note that REC's revised proposal in the our comments to this NPRM does not include the controversial "§73.815 Regime" which called for the use of the former LP-10 distance tables that, at the time of enactment of the LCRA, was still codified even though no LP-10 licenses were ever issued.

[2] Id. at ¶¶ 68-81.

[3] Id. at ¶¶ 82-84.

[4] - NPRM at n. 15.

[5] NAB Comments, MB Docket 99-25 (Aug 2, 1999) at 2.

[6] Pub. L. 106-553; 114 Stat. 2762A-111 (2001) ("RBPA").

[7] Fybush, Scott; *Northeast Radio Watch: December 25, 2000*, Retrieved Nov. 2, 2019 from https://www.bostonradio.org/nerw/nerw-001225.html ("Even as the FCC moved closer this week to opening the window for the first set of LPFM applications, the powers that be at the House Commerce Committee sent H.R.

Commission's findings that LPFM stations on third adjacent channels would not cause interference, the NAB balked at the whole study to the point of nit-picking everything from the type of receivers used to the selection of test locations.[9]

6. With the passage of the Local Community Radio Act[10] comes more "theories":

The second-adjacent waiver contradiction – Despite the thousands of FM translators, most operating with much larger interfering contours than LPFM stations that have used undesired-to-desired (U/D) ratio studies to demonstrate that no interference would be caused to full-service FM stations[11], it seems that for some reason, an LPFM station, with an even smaller interference contour would suddenly "degrade the audio quality of FM service".[12] There is nothing "magic" about the transmission from an LPFM station that is any different than one of these translators, except of course, the fact that perhaps the programming is coming from a local source not available elsewhere on the dial or not imported from Twin Falls, Idaho. The NAB's true reason for opposing the creation and expansion of LPFM screams clearly in this line of testimony.

The legislative history mandates that LPFM be kept at 100 watts – NAB depends on a "House Report" that claims that LPFM stations "must operate at less than 100 watts".[13] However, the Commission made it very clear that the law is the law by finding unpersuasive, NAB's reliance on the legislative history as the actual language of the LCRA does not mandate any specific power levels that LPFM stations must be licensed at.[14]

3439 (the "Preservation of Broadcasting Act") along to the full House for what's likely to be an easy victory. The approval comes amidst nasty words back and forth between the FCC and the National Association of Broadcasters, whose high-powered lobbyists distributed a CD on Capitol Hill that they claimed simulated the kind of interference full-power stations would receive from LPFMs on third-adjacent channels. The FCC says the CD blatantly misrepresents the actual interference that might result; the NAB, unsurprisingly, has filled its Web site with expert testimony to the contrary.")

[8] See *Experimental Measurements of the Third-Adjacent Channel Impacts of Low Power Stations, Volume One: Final Report*, MITRE Corporation (May 2003) ("MITRE Report") available at: https://www.recnet.net/mitre/2.pdf

[9] NAB Comments, MM Docket 99-25 (Oct. 14, 2003).

[10] Pub. L. No. 111-371, 124 Stat. 4072 (2011) ("LCRA").

[11] See *Living Way Ministries, Inc.* Memorandum Opinion and Order, 17 FCC Rcd 17054, 17056 (2002) ("Living Way") at 5. *Recon denied* 23 FCC Rcd 15070 (2008).

[12] NAB Comments, MM Docket 99-25 (May 5, 2012) at 8.

[13] NAB Reply Comments, MM Docket 99-25 (May 21, 2012) at 10.

[14] See *Creation of a Low Power Radio Service,* Sixth Report and Order, 27 FCC Rcd. 15402 (2012) ("Sixth Order") at ¶ 206.

This is consistent with a future statement made in this docket that the Commission is required to implement and interpret legislation as enacted.[15]

7. The 2013 LPFM window commences, licensed LPFM stations identify issues and REC takes action by petitioning for LP-250 in RM-11749. This brings a new excuse from the NAB:

LP-250 is "premature" because of pending LPFM applications – In comments opposing REC's RM-11749 LP-250 petition, the NAB blames the fact that since the Commission has not yet finished its processing of LPFM applications because there was still 215 applications (mostly questionable applications for which REC had filed *Informal Objections* against) were still pending.[16] Of course, these comments fail to realize that even though all of the applications have not yet been processed, the petition was filed after it was clear what the magnitude of potential LPFM stations were going to be and REC had performed studies based on a worst-case scenario as to the number of LP-100 stations that could upgrade to LP-250. This is yet another attempt by the NAB to blow smoke.

8. The focus then turns to AM Revitalization. Existing FM translators move and take up strange directional patterns and cause interference to LPFM stations and then for those who could not make a 250-mile move, the Auction 99 and 100 filing windows. REC files RM-11810 to address the translator move-ins and the NAB delivers a new excuse for why LP-250 should not be allowed:

LP-250 is "premature" and violates the LCRA because of AM Revitalization – Also in RM-11749, the NAB feared that giving slight increases to LPFM stations was going to violate the LCRA because it would take opportunities away from new cross-service translators in the filing windows that would eventually become Auctions 99 and 100.[17]

9. Well, just like LP-250 being "premature" because of the processing of the 2013 LPFM window, it is now mature as most of the processing of the Auction 99 and 100 translators has been completed and translators have marked their places in the sand. Both of NAB's "prematurity" arguments are now moot as the state of spectrum processing is now "mature" and so now we know what the spectrum would look like for

[15] See *Creation of a Low Power Radio Service*, Sixth Order on Reconsideration, 28 FCC Rcd. 14489 (2013) ("Sixth Reconsideration") at ¶ 36.

[16] NAB Comments, RM-11749 at 2-3. To this day, only one application from the 2013 LPFM filing window remains pending. That application is the subject of an inquiry as a result of an *Informal Objection* filed in 2013 by REC and subsequently supplemented over time.

[17] Id. at 6-10.

qualified LPFM stations to upgrade.[18] So, now that we have a clearly defined secondary spectrum, LPFM stations are where they are at, FM translators have had multiple opportunities to stake their claim and IBOC digital operations have been stable with lackluster growth, where does the NAB go next? Why yes, back to the already debunked ancient argument that the LCRA legislative history that the law is based on a 100-watt service.[19]

10. The NAB has clearly demonstrated in the past 20 years, through its deception of Congress in the enactment of the RBPA and missteps in theorizing LPFM creating a digital disaster to a goose-and-gander faux pas where it comes to second-adjacent waivers, it is clear that the NAB's reasons for opposing LP-250 is not because of interference, it's because they want their members like Beasley,[20] Saga[21] and Hubbard[22] to be monopolistic voices in their markets and they are afraid that LPFM stations carrying programming like *Democracy Now!* will give their Rush and Hannity listeners another viewpoint to consider.[23] The NAB has been in this cat-and-mouse game with LPFM for two decades now and now the chase is going around in circles rehashing 7 year old debunked arguments.

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[18] Even though there may be some filing activity associated with Auction 104 in 2000, its important to realize that unlike FM translators, LPFM stations are required to protect vacant FM allotments based on their class distance separation. Any modifications of commercial facilities by winners of Auction 104 would be primary to any LPFM service and that LP-100 stations would be required to remediate interference in accordance with §73.809(a). In addition, as proposed by REC, LP-250 stations would be required to remediate interference in the same way that FM translators are required to remediate in a manner similar to §74.1204(a) that applies to FM translators.

[19] NAB Comments at n. 7.

[20] See *Hispanic Arts of Tampa*, WVVF-LP, Town n' Country, Florida ("Hispanic Arts"), File No. BLL-20150803AFO, "Complaint" (Jul. 31 2015). (Complaint filed by entities controlled by Beasley Media Group, Inc. claiming that the LPFM station is not operating in accordance to their educational statement and instead produced a "media kit" and is operating a format that "competes" with Beasley but in a noncommercial manner.). While there were eventually other issues that would come out of this case in subsequent filings, (see 32 FCC Rcd. 1804(2017)) the initial bullying took place because the full-service station, the only Hispanic format station in the market at the time, felt threatened by an LPFM station using their first amendment right to also carry a Hispanic format.

[21] See *Max Out Foundation*, File No. BNPL-20131114BQA, Letter (Feb. 24, 2015) (Bureau finds that Saga failed to demonstrate that a second-adjacent channel waiver request filed by Max Out was defective, that the use of undesired-to-desired (U/D) ratios was acceptable and that a one meter variation in the antenna height is inconsequential.)

[22] See *Tohono O'Odham Nation*, File No. BNPL-20131113BMC, Petition to Deny filed by Phoenix FCC License Sub, LLC (Jan. 6, 2014, *denied and application granted* Mar. 10, 2014); See also *West End Church of Christ*, File No. BNPL-20131113BOK, Petition to Deny filed by St. Louis FCC License Sub, LLC (Jan. 6, 2014, *denied and application granted* Mar. 10, 2014)

[23] Despite that reference, it should be clear that over 50% of LPFM stations are licensed to faith-based organizations, many of which may be right leaning. REC is aware of some secular stations that are also right-leaning. While it is clear that community-based LPFM stations may be left-leaning, there are many that are either centrist or are just apolitical. Especially with the bipartisan support that the LCRA had, it is very clear that LPFM is a bipartisan service.

11. It is important to realize too that in the past few years while "Tom"[NAB] has been chasing "Jerry"[LPFM] around the kitchen over the LPFM interference myth, "Spike" the dog, in the form of alternative media services such as satellite radio, audio streaming and "over the top" video services, is in the process of eating both Tom and Jerry for lunch. In other words, these "non-radio" services are more threatening to Beasley, Saga and Hubbard than any 250-watt noncommercial station would ever be. Our younger generations are simply not discovering what is on the radio and many older folk that tuned out are not coming back. The nice thing about this "app" called "radio" is, unlike many mobile apps, you can actually listen to other services (stations) that are not associated with the app. If word gets around town that a new LPFM station is playing something compelling, new and interesting, this may get our younger generation to finally discover radio and our older generations to turn the radio back on again. Unlike the mobile app, there is a selector that allows listeners to tune to unaffiliated stations. In other words, instead of warring over LP-250 and the alleged radio apocalypse that it will cause, LPFM and "big radio" need to be working together to get the public to simply turn the radio back on again. There's no bandwidth requirements, no measured music licensing fees based on listening hours thus, there's plenty of radio for all of us, LPFM and full-service alike. Listeners will be curious and they *WILL* tune. With that, we need to get the interference myths out of the way and have a full and complete record on LP-250, FM translator relief and LPFM-to-LPFM short-spacing in a *Further Notice of Proposed Rulemaking* in this docket. REC's door is still open for the NAB, Beasley, Hubbard, Saga and anyone who wants to work together to make radio great again. Let's make this happen!

B. The record continues to show support for LP-250

12. While there has been significant support for LP-250 since the Commission originally proposed it in the *Fourth NPRM*[24] as well FM translator relief originally proposed in RM-11810, the support continues through this proceeding. Steven White and Jeff Sibert support LP-250 stating that it will help in building penetration situations and is more spectrally efficient than an LPFM station obtaining an FM-translator to extend or enhance their reach as well as supports REC's argument in support of FM translator relief that the LCRA changed the scope of distance separation to only apply to full-service stations while still prescribing some form of protection towards other services including FM translators.[25] The LPFM Engineers, those who, in addition to REC will be doing contour studies for LPFM stations at reasonable rates have validated the claims made by REC and various LPFM stations that LP-250 would address building penetration and coverage issues, especially in light of all of the translator move-ins.[26]

[24] 27 FCC Rcd. 3315 (2012) ("Fourth NPRM").

[25] Steven White at 3-4, Jeff Sibert at 12, 15.

[26] LPFM Engineers at 7.

13. In the past seven years, there have been many distractions such as the "microradio agenda" to save the 10-watt service, the 2013 LPFM window, the 2016 FM translator major move window, Auctions 99 and 100, the TV repack and the eventual analog sunset. The secondary spectrum has currently taken a break and with that, we now have a snapshot of mostly stable secondary band use. This can now give us an indication on what can be done to help LP-100 stations better serve their local communities by identifying where the opportunities would be available, what impacts they would have on spectrum crowding and what preventative measures can be taken to prevent interference in a manner that best utilizes spectrum. Part of this efficient spectrum utilization is allowing the use of unused spectrum in cases where it can be used to provide relief to an existing LPFM station or provide a new opportunity for a local community voice but that opportunity is blocked due to an arbitrary circle placed around a distant directional FM translator and by using industry accepted techniques, it can be shown that there would be no interference. We must also do it in a way that respects statute. The Commission has already made it clear that the LCRA does not specify power levels.[27] The LCRA only states that the Commission must prescribe protections and for the protection of full-service FM stations through the use of minimum distance separations.[28] We also must take into consideration providing more flexibility between two LPFM stations, something that is not even in the domain of the LCRA.

14. With that, it is REC's motion that the Commission move forward with a *Further Notice of Proposed Rulemaking* to propose LP-250, FM translator relief and LPFM short-spacing. The use of a *Further Notice* is in the public interest as it will not delay the upcoming NCE and LPFM filing windows as well as the analog TV sunset and the preparatory activities related to that.

III. WHAT HAPPENS IN NEW JERSEY, STAYS IN NEW JERSEY

A. The "birthplace" of FM radio

15. REC understands the unique situation and concerns expressed by the New Jersey Broadcasters Association (NJBA) in respect to the FM broadcast landscape in the Garden State. The State of New Jersey has the second highest population density in the nation with more than 1,200 persons per square mile and a population of nearly 9 million.[29] New Jersey could even be considered the birthplace of FM broadcast radio. Built in 1938, the unique tower constructed by Edwin Armstrong in Alpine, New Jersey that was used for experimental broadcasts on 42.8 MHz from station W2XMN which would eventually lead to the

[27] See *Sixth Order* at ¶ 206.

[28] See LCRA §§ 2(a)(1) (*prescribing protections*) and 3(b)(1) *(requiring the use of distance separation in respect to full-service FM stations).*

[29] https://www.census.gov/data/tables/2010/dec/density-data-text.html

FM radio we have today.[30] The 1938 vintage tower is still in use today and was crucial in the continuity of FM radio and television broadcasting in the wake of the terrorist attacks of September 11, 2001.[31]

B. New Jersey's unique Class-A situation compared with LP-250

16. Being a dense state and the pioneer state of FM radio, it is understandable how New Jersey has a considerable number of Class A FM stations that were authorized prior to the FCC increasing the Class A power from 3 kW to 6 kW in 1989.[32] Being in one of the most concentrated areas for Class A FM stations, many stations in New Jersey can't meet the new distance separation requirements and therefore, these stations are held back with a service contour of 24 km or less. With that, to compare the "upgrades" of New Jersey Class A FM stations with the creation of a LP-250 class of service is without merit. When the Commission expanded Class A, they provided recalculated distance separation tables that were based on computing the class-maximum protected and interfering contours for all class combinations thus meaning that the Commission "expanded out". In the case of LPFM (LP-100) towards full-service FM stations, the Commission calculates the distance of the interfering contour of a class-maximum LPFM station, the protected contour of the class-maximum incumbent facility and an additional 20 meter buffer zone on co-channel and first-adjacent channels.[33] The upgrade to LP-250 would involve increasing the interfering contour into the area that is currently part of the buffer zone.[34] Therefore, where Class A "expanded out", LP-250 will "expand in".

17. Also, because LPFM has used distance separation, all New Jersey Class A FM stations with service contours of less than 24 kilometers have been protected like they have service contours of 28 kilometers.[35] In that way, LP-100 stations have been significantly overprotecting over half of the Class A FM stations in New Jersey. We have noticed also in New Jersey, most LPFM stations are on Channels 240, 299 and 300 and that these channels and that these channels are also used widely by FM translator and grandfathered Class D FM stations. In this filing, we provide contour maps for many of the New Jersey FM

[30] Fybush, Scott, *The Birthplace of FM Broadcasting, Alpine, NJ*, Tower Site of the Week (Jun. 10, 2005), retrieved November 3, 2019 from https://www.fybush.com/sites/2005/site-050610.html

[31] See Id.

[32] See *Amendment of Part 73 of the Rules to provide for an additional FM station class (Class C3) and to increase the maximum transmitting power for Class A stations,* MB Docket 88-375, 4 FCC Rcd. 2792 (1989), 4 FCC Rcd. 6375 (1989), 6 FCC Rcd. 3417 (1991).

[33] See *Creation of a Low Power Radio Service*, Report and Order, 15 FCC Rcd. 2205 (2000) ("LPFM R&O") at ¶ 64.

[34] See also *Forth NPRM* at n. 125.

[35] See *LPFM R&O* at 58 ("we are adopting minimum distance separations between LPFM and full-service stations based on the assumption that full-service stations operate with maximum height and power for their class.")

stations that could have a potential for an LP-250 upgrade.[36] We have found that to permit these stations to upgrade, we are finding that the issue is not nearby full-service stations but instead, nearby secondary services, including other LPFM stations that would preclude any upgrade to LP-250 or limit it otherwise.

C. New Jersey FM stations already receive "special" protections from LPFM

18. Being in the state that ranks second in population density (below Delaware) and wedged between the New York and Philadelphia metro markets, it is very understandable that, spectrum-wise, New Jersey has received "the short end of the stick". These special needs were recognized by Congress in the Local Community Radio Act of 2011. In Section 7(6), it states:

> The Federal Communications Commission shall for full-service FM stations that are licensed in significantly populated States with more than 3,000,000 population and a population density greater than 1,000 people per one square mile land area, require all low-power FM stations licensed after the date of enactment of this Act and located on third-adjacent, second-adjacent, first-adjacent, or co-channels to such full-service FM stations, to provide the same interference remediation requirements to complaints of interference, without regard to whether such complaints of interference occur within or outside of the protected contour of such stations, under the same interference complaint and remediation procedures that FM translator stations and FM booster stations are required to provide to full-service stations as set forth in section 74.1203 of its rules (47 CFR 74.1203) as in effect on the date of enactment of this Act. Notwithstanding the provisions of section 74.1203, no interference that arises outside the relevant distance for the full-service station class specified in the first column titled `required' for `Co-channel minimum separation (km)' in the table listed in section 73.807(a)(1) of the Commission's rules (47 CFR 73.807(a)(1)) shall require remediation.[37]

Currently, there is only one state that meets the qualifications of having at least 3,000,000 population and a population density that exceeds 1,000 people per one mile square land area, New Jersey.[38] There are currently 21 LPFM stations in the state, of which, 14 were originally licensed after the enactment of the LCRA.[39] For those 14 LPFM stations, and for any future new LPFM stations, this law invokes the "old" FM translator rule §74.1203(a) for any LPFM station that does not meet the co-channel minimum distance separation, regardless of which channel the full-service station is on. Despite this law being enacted for the past 8 years, REC Networks is not aware of any cases where a New Jersey-licensed full-service FM broadcast station has invoked this law against an LPFM station.

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[36] See Appendix D.

[37] LCRA §7(6).

[38] It was also argued that Puerto Rico would also meet this qualification although Puerto Rico is not considered a "state" for the purpose of the LCRA.

[39] See Appendix A.

D. New Jersey should not dictate policy for the other 49 states and territories

19. Based on a REC CIRCLES Report that was recently conducted for these *Reply Comments*, we have identified the areas in New Jersey where potential new LPFM stations could be applied for in the state as LP-100.[40] We note that even with the elimination of the Channel 6 protection requirements, the entire reserved band is saturated, and those 20 channels will not be available in New Jersey. With some exceptions, a majority of the areas where LPFM will be available are in the less dense portions of the state including along the Jersey Shore and in Delaware Bay with the widest availability being in the state's southernmost county, Cape May.

20. As we will state *infra,* the additional protection protection requirements proposed by NJBA for minor moves, LPFM stations operating boosters and TV channel 6 protections, are not necessary, even in New Jersey because of other protections already in place. REC recognizes the additional issues that New Jersey faces, especially with its rich history of being the pioneer in FM radio. We must also recognize that New Jersey is facing a problem with broadcast band piracy with an annual average of 20 Enforcement Bureau cases resulting in Notices of Unlicensed Operation for operations within the state.[41] Because of LPFM's overprotection of full-service stations, especially to under-powered Class A stations in New Jersey and the additional New Jersey specific protection obligations for LPFM stations in or near the state, New Jersey is well protected from any perceived LPFM interference. Again, we have yet to hear of a case requiring displacement of an LPFM station under the New Jersey specific provisions. REC is willing to work with NJBA to address any specific issues or any trends, if they ever come up in the future. Like with the NAB, our door is open for the NJBA.

IV. OTHER ISSUES

A. Directional antennas

1. The scope of directional use in LPFM is fairly limited

21. Currently, the Commission Rules for LPFM permit directional antennas in two very limited scenarios: (1) for use by public safety entities and (2) for use in connection with a second-adjacent channel waiver request.[42] Public safety entities may only use single antennas with a standard pattern as opposed to "composite" antennas.[43] There is no specification for antenna types in the case of directional antennas used for second-adjacent channel waivers. In the *NPRM*, the Commission proposes to remove the "standard pattern"

[40] See Appendix B.

[41] From REC Networks *American Radio Rebel Repository* (ARRR) database. Accessible at https://recnet.com/arrr; based on data compiled for incidents in the years 2017 and 2018.

[42] 47 C.F.R. §73.816(b).

[43] 47 C.F.R. §73.816(c)(1).

requirement for public safety stations, add a requirement similar to that of full-service which requires a showing by a licensed engineer or surveyor to verify the installation and to expand the scope of the rules to permit directional antennas in a manner that would be used to comply with international agreements thus permitting LPFM stations within 125 km of Mexico to be able to operate up to 100 watts ERP while showing that the antenna will operate no more than 50 watts along radials that are within 125 km of Mexico.[44]

22. *Public safety directional antenna use* – The use of directional antennas was first permitted in the *Order on Reconsideration* at the request of the New York State Thruway Authority (NYSTA).[45] NYSTA and consulting firm Lohnes and Culver stated that interference could be reduced by not wasting signal energy over unpopulated areas where service is not intended and the ability to use high gain antennas for a lower powered transmitter.[46] While the NYSTA and several other state departments of transportation did apply for LPFM stations in the 2000-2001 window series, very few stations were ever constructed and of the current state public safety stations still operational, none are operating a directional antenna as originally suggested by NYSTA.[47]

23. *Second-adjacent channel use* – In the *Sixth Order*, The Commission granted the ability for LPFM stations to use "off the shelf" directional antennas as a method of showing a lack of interference in populated areas in connection with waivers of the minimum distance separation to second-adjacent channel facilities.[48] For example, in the licensing database, there are only 7 LPFM stations that are currently using Kathrein Scala directional models such as the CA2-FM, CA5-FM/CP/RM and HDCA5-CP/RM of which, two are configured as a multi-antenna "skewed" composite operation. We note that a couple of other LPFM stations are using the directional characteristic of the Nicom BKG series antenna in order to limit radiation towards an occupied structure.[49]

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[44] *NPRM* at 4-7.

[45] See *Creation of Low Power Radio Service*, Memorandum Opinion and Order on Reconsideration, 15 FCC Rcd. 19208 (2000) ("*Order on Reconsideration*") at ¶¶ 45-50.

[46] Id at ¶ 46.

[47] - During the 2000-2001 window, the following states applied for stations: California (3 applications, 2 operational), Colorado (16 applications, 11 operational), Delaware (7 applications, now a full-service licensee), Florida (5 applications, 4 were licensed but cancelled in 2004), Georgia (10 applications), Illinois (2 applications), Iowa (61 applications, 4 operational with Nicom BKG-88 antennas), Maryland (1 in 2000 window, 2 in 2013 window, 2 operational for public transit information), New Mexico (14 applications), New York State DOT (36 applications), NYSTA (4 applications), North Dakota (8 applications), Utah (55 applications), Vermont (14 applications) and Virginia (1 application). None of the operational stations are using a directional antenna.

[48] *Sixth Order* at ¶ 79.

[49] See Note 59 *infra.*

24. *Stations in the Mexican "Strip Zone"* – In accordance with the *Agreement Between The Government of the United States of America and the Government of the United Mexican States Relating to the FM Broadcasting Service int he band 88-108 MHz* ("*Mexico Agreement"*), low power FM stations (LPFM and FM translators) within 125 km of the border with Mexico may operate with an ERP not exceeding 50 watts and to produce an interfering contour not exceeding 32 km and a protected contour of more than 8.7 km in the direction of the other country.[50] There are currently 57 LPFM stations in the Mexican Strip Zone (less than 125 km to the border).[51] REC's proposed rule was directed mainly to benefit these 57 stations as well as any future stations that may operate from the Strip Zone region. In most cases, stations that are between 125 to 320 km from Mexico as well as within 320 km of Canada will unlikely be required to reduce power at the LP-100 level as international agreements are already met.[52] REC has already identified LPFM stations in Arizona and California that are interested in implementing full LP-100 service in the directions other than towards Mexico in order to better serve their local communities.

2. Common misunderstandings of directional antennas in LPFM

25. While there is support for the expansion of directional antennas to include international agreements and composite antennas, there is also some confusion among opponents as to the magnitude of this proposal[53], especially as it relates to the "non-rejected" items. Educational Media Foundation (EMF) describes the proposal as a "more routine use" of directional antennas while the National Association of Broadcasters (NAB) calls it "expanded use".[54] With over 2,700 licensed LPFM stations, adding less than 100 LPFM stations to those eligible to utilize directional antennas is not a *carte blanche,* across-the-board expansion of directional antennas in the service.[55] It is important to realize that even though an LPFM station may operate a directional antenna, they are still considered as "non-directional" facility and must limit its peak lobe to the station's authorized ERP. In accordance with the LCRA, all LPFM stations must keep minimum distance

[50] *Mexico Agreement* at ¶ 2.1.2-2.1.3.

[51] See Appendix F.

[52] See *Working Arrangement for the Allotment and Assignment of FM Broadcasting Channels under the Agreement between the Government of Canada and the Government of the United States of America relating to the FM Broadcast Service* (as amended Jul. 9, 1997) at ¶ 4.3 (specifying a maximum 34 dBu interference contour of 60 km). At LP-100, the 34 dBu interfering contour for 100 watts at 30 meters HAAT is 26.8 kilometers. At LP-250, the 34 dBu interfering contour for 250 watts at 30 meters HAAT is 35.6 kilometers.

[53] Steven L. White at 2-3, LPFM Engineers at 1-2, Jeff Sibert at 3-4 and City of Boston at 7-8.

[54] EMF at 1, NAB at 2.

[55] NJBA at 3.

separations with incumbent full-service stations.[56] There is nothing in the adopted proposals as well as the tentatively rejected items (LP-250, FM translator relief and LPFM short-spacing) that will reduce the minimum distance separations between LPFM stations and full-service stations on co-, first- and second-adjacent channels except as authorized under LCRA to second-adjacent channel stations. It is REC's position that NAB and EMF are exaggerating the situation. There are definitely issues with some FM translator stations not constructing their directional antennas in accordance with their construction permits, however unlike LPFM stations, translators are not required to keep a minimum distance separation which includes overprotection through a buffer zone. The benefits to a portion of the 57 LPFM stations such as those in Tucson that wish to provide a similar level of service as their neighbors in Phoenix while still keeping a prohibition on a significant number of LPFM stations outweighs any false perception of any kind of widespread use of directional facilities. LPFM stations that are in these situations need that flexibility.

3. "Composite" antenna and "unlisted" standard antenna requests

26. As stated, the use of these antennas by LPFM stations, especially those of a composite variety would be few and far between. At the time when REC filed the *Petition for Rulemaking* that would become RM-11810 as well as in REC's comments in the *Media Modernization* MB Docket 17-105, the Commission was still using the Centralized Database System (CDBS) for the filing of FM engineering proposals, including for LPFM. Within CDBS, there is a list of "standard" directional antenna patterns. While most of the standard patterns are for TV, there were also standard patterns for FM of which all but two of the antennas were manufactured by Kathrein-Scala.[57] Using a standard pattern in CDBS meant that tabulations did not have to be entered.[58] The standard pattern list did not include patterns from other manufacturers including antennas that are normally "omnidirectional" but include a directional characteristic for which the manufacturer discloses with tabulations. These antennas include the Nicom models BKG-77 and BKG-88 (which use the same published pattern) and the Shively Labs model 6812b.[59] REC as well as others have successfully proposed and deployed these antennas with this directional characteristic for LPFM and FM translator applications. For these stations, the use of the Nicom and Shively antennas is an inexpensive method providing a directional antenna that can protect a distant station (in the case of translators) and when combined with the downward elevation pattern, can properly protect short-spaced second adjacent channel stations from predicted

[56] LCRA §3(b)(1).

[57] See Appendix G.

[58] For FM translator and full-service FM applications. The LPFM application (CDBS Form 318 and LMS Schedule 318) does not support directional antennas and field tabulations.

[59] Tabulations for the Nicom BKG-77 (and BKG-88, which uses the same tabulations) can be found at https://www.nicomusa.com/bkg77. Tabulations for the Shively 6812b can be found at https://www.shively.com/product/6812-antenna-series/.

interference in occupied areas.[60] Both of these arrangements would have been considered "composite", even in cases where a single bay antenna is used, all because the Nicom BKG-88 does not have a standard pattern in CDBS.[61]

27. The Commission has proposed that §73.316(c) should apply to composite directional antenna installations. In response, REC agrees with our peers in the LPFM engineering community that a §73.316(c)-style engineering showing is "overkill for stations of such low power and small footprint, whereas for powerful stations with large footprints, the consequences of directional pattern problems have potentially huge impacts" and also cites that LPFM's peer service, FM translators do not have this requirement.[62] Jeff Sibert also points out the latter issue and further states that LPFM stations should not have to face a greater regulatory burden than FM translator stations.[63] REC also agrees with Jeff Sibert on his positions in this matter.

28. It is important to realize that LPFM stations are still required to protect full-service stations through distance separation and those minimum distance separations further include a buffer zone to overprotect full-service stations. The approved and adopted proposed applications for directional antennas in LPFM are limited to public safety (which no LPFM station has ever utilized a directional antenna under that scenario), second-adjacent channel waivers and now, to provide relief to some of the 57 LPFM stations located in the Mexico Strip Zone. Even with the tentatively rejected items that REC is forwarding, LP-250 would still require the LCRA mandated LP-100 distance separation minimums similar to those proposed by the Commission in the *Fourth FNPRM* and for all three scenarios that REC is calling for a *Further Notice of Proposed Rulemaking* (LP-250, Translator Relief and LPFM-to-LPFM short-spacing), we are also calling for a §74.1203(a)-style interference remediation policy to address any real world issues that may come up. REC rejects NAB's perception that the "LCRA dictates that the technical rules for FM translators should be copy-and-pasted for LPFM"[64] REC does not support such a "copy-and-paste" change because we recognize that

[60] See *Catholic Communications Corporation*, File No. BMPL-20170330AEP, attachment 11 (granted Oct. 31, 2017) (Proposed a two-bay Nicom BKG-88 oriented in a manner that combined with the published elevation pattern of the antenna demonstrated that the 120.7 dBu interfering contour of the higher powered radials would reach the "occupied" levels outside of the building and that the lower-powered radials would penetrate the building but not reach the occupied areas of the building); See also *Los Angeles Social Justice Radio Project*, File No. BMPL-20190513ABJ (granted May 14, 2019) (directional pattern of Nicom BKG-88 used to limit interfering contour to prevent penetration of a single occupied residence)

[61] If these had been FM translator applications, we would have had to select "composite" in CDBS and manually enter the tabulations. In LMS, standard patterns do not exist and all antennas require tabulations. Because the "standard pattern" vs. "composite" antenna definition no longer exists since the conversion from CDBS to LMS, it can be argued that any rule limiting LPFM to "off-the-shelf" antennas and restricting "composite" is now obsolete.

[62] LPFM Engineers at 1-2; see also 47 C.F.R. §74.1235, paragraphs (f), (g), (h) and (i).

[63] Jeff Sibert at 4.

[64] NAB at 3 citing Low Power FM Advocacy Group, RM 11810 (Jul. 14, 2018) at 2.

such a change is in contravention with LCRA Section 3(1) however the LCRA does allow some flexibility but the minimum distances to full-service must be maintained.[65]

29. With all of this said, it can be concluded that LPFM already overprotects full-service stations and that directional antenna use by existing LPFM stations and those stations eligible in the expansion to also include international agreements is and will remain *de minimis*. Likewise, it is not necessary to require a full-service style of validation where the policies that currently apply to FM translators, a peer service to LPFM, would be more applicable.

4. Directional antennas for tentatively rejected items

30. For the three tentatively rejected items (LP-250 without the "§73.815 Regime", Translator Relief and LPFM Short Spacing), there may be an increased use of directional antennas by LPFM stations if such a directional antenna is needed to prevent contour overlap. REC wishes to make it clear again that for LP-250, there is still a statutory minimum distance separation requirement and LPFM stations, even at LP-250 would continue to overprotect full-service FM stations.[66] Because of the distance separation, the use of directional antennas in LP-250 would be extremely few and far between. REC envisions that directional antennas for LP-250 would be limited to "foothill effect" situations however a power reduction or "no upgrade" would be a preferred method of handling LP-250 in a foothill situation.[67]

31. The use of directional antennas for translator relief and LPFM short-spacing would more closely mirror traditional directional antenna usage as it involves short-spacing. We understand the general concerns expressed by NAB, EMF and NJBA and those concerns would be more likely in these situations as there is not an underlying minimum distance separation for translators and other LPFMs like there is with full-service stations. As stated in comments, in order to address the concerns of NAB and others and to assure that LPFM stations operating in such a manner provide a viable service, REC would entertain a restriction on directional antennas for LP-250, translator relief or LPFM short-spacing that does not involve one of the original reasons for using a directional antenna (public safety, second-adjacent short-spacing and/or international agreement) that would require less than a 15 dB maximum to minimum ratio and no more than 2

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[65] See REC Networks comments, RM-11753 (Aug. 26, 2015) at ¶¶ 62-64. Much of what REC discussed in the technical comments in RM-11753 related to something we called "Plan B", which became the "§73.815 Regime" in RM-11810. In *Comments* in this proceeding, REC withdrew the "§73.815 Regime" aspect (using the LP-10 tables instead of LP-100) in favor of an LP-250 service similar to what was proposed in the *Fourth FNPRM* with two additional interference protection backstops (outer contour protection and interference remediation).

[66] See *Fourth NPRM* at n. 125.

[67] See ¶ 37 *infra*.

dB change per 10 degrees, similar to the full-service requirements.[68] This would reduce the number of directional antennas that can be used while allowing the directional characteristics of simple antennas like the Nicom BKG-77 and 88 can still be used.[69]

B. FM boosters for LPFM

32. REC has been a leader in identifying potential LPFM stations for FM boosters mainly within REC's Area of Interest of Southern California. Southern California is a unique area and many LPFM stations there to face unique terrain challenges. These stations also face unique environmental challenges. As these comments are being written, Southern California is in brush fire season and there are several active fires right now. REC understands the concerns expressed by expressed by NAB related to the siting of boosters and the use of synchronization.[70] We are also cognizant of the concerns regarding interference expressed by NJBA and EMF.[71] Since the grant of the KWSV-LP booster, REC specifically requested that LPFM stations thinking that they may need a booster to contact REC Networks first. REC did receive inquiries from many different parts of the country including Puerto Rico. In most of the cases, we had determined that the field strengths of the primary station are too strong to recommend a booster. REC has turned down more requests than we have filed. On the concern of interference, we must point out that since FM boosters (including LPFM boosters) are in Part 74, Subpart L, along with FM translators, all FM boosters are subject to interference remediation rules in §74.1203(f) and §74.1204(a). A class-A or any other class of station experiencing interference by an FM booster can request remediation through the recently changed policy.[72]

33. REC agrees with the LPFM Engineers that in some very rare cases, such as providing services within multiple canyons, there should be an avenue to make a very compelling argument using the waiver process to request additional boosters over the two maximum.[73] REC still feels that the demand for boosters for LPFM will be few and far between but we want to be assured, through codification that future requests for

[68] See also 47 C.F.R. §73.316(b).

[69] It also heeds a concern expressed by the Commission in the *Sixth Order* at ¶ 80. ("We caution LPFM applicants against using this technical flexibility [directional antennas for second-adjacent channel waivers] to limit the already small service areas of LPFM stations to such an extent that, while their LPFM applications are grantable, the LPFM stations will not be viable.")

[70] NAB at 6.

[71] NJBA at 7-8, EMF at 7-8.

[72] See *Amendment of Part 74 of the Commission's Rules Regarding FM Translator Interference*, 34 FCC Rcd. 3457 (2019).

[73] LPFM Engineers at 4-5.

boosters by LPFM stations in situations such as hard terrain where they will work will be granted and that existing boosters can be modified when necessary. Codification prevents misinterpretation in the future.

C. Definition of "minor change"

34. REC agrees with the LPFM Engineers and Jim Sibert that the maximum distance that an LPFM station can move as a minor change should be extended where a contour study is not required.[74] LPFM Engineers recommend 13 kilometers using the logic that 5.6 rounds to 6 and so does 6.4, so 6.4 x 2 = 12.8, which rounds to 13; and Sibert recommends 11.2 by simply multiplying 5.6 times two.[75]

35. §73.808 of the Rules states that distance computations for LPFM shall be calculated in accordance with §73.208(c) of the Rules.[76] §73.208(c) outlines the mathematical formula used for calculating distances, and whatever the result, is rounded to the nearest kilometer.[77] When the Commission first created LPFM, LP-100 stations were only allowed to move 2 kilometers, a rounded number.[78] In the *Second Order on Reconsideration* at the request of the United Church of Christ, the Commission extended the limit to 5.6 kilometers.[79] 5.6 kilometers is the standard service contour size for a LP-100 station.[80] In past waiver requests, including those filed by parties to LPFM Engineers, a compelling argument for requests for waiver of §73.870(a) have been made that because 5.6 rounds to 6 and because 6.499 also rounds to 6 that a move of up to 6.499 kilometers should be permitted. The 5.6-kilometer value is an "oddball" in the broadcast regulatory structure. REC does feel that this value should be a rounded number. Since 5.6 kilometers times two is 11.2, it can be argued that 11 kilometers should be that rounded value. If the Commission implements LP-250 in the future, the rounded value would be 14 kilometers. It's time to put these non-rounded numbers to an end. REC supports 11 kilometers (11.2 kilometers, rounded down), especially given the nondirectional nature of most LPFM stations. Any move proposing more than 11 kilometers rounded must include a contour study to demonstrate that the 60 dBu (1 mV/m) contours of the current and proposed facility overlap. If LP-250 is implemented, that minimum value should be 14 kilometers (14.2 kilometers, rounded down).

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[74] LPFM Engineers at 3-4, Sibert at 6.

[75] See Id.

[76] 47 C.F.R. §73.808.

[77] 47 C.F.R. §73.208(c).

[78] *LPFM R&O* at ¶ 152.

[79] See *Creation of a Low Power Radio Service*, Second Order on Reconsideration, 20 FCC Rcd. 6763 (2005) ("Second Recon") at ¶¶ 12-14.

[80] 47 C.F.R. §73.811(a).

36. REC disagrees with NJBA that some form of a 45 dBu protection study should be required on such minor change applications.[81] This again, is another "what happens in New Jersey..." type of issue. Even if an LPFM station is permitted to make a minor change at a longer distance, they are still required to meet minimum distance separations to other facilities including overprotected full-service stations (due to the buffer zone) and in the case of New Jersey, even more overprotection as not all Class A stations are operating at full facilities.[82] In addition, for LPFM stations that are on first, second or third-adjacent channels but do not meet the co-channel minimum distances from full-service FM stations licensed to cities in New Jersey, the New Jersey FM stations do have LCRA Section 7(6) at their disposal if interference can be demonstrated. Remember, LCRA Section 7(6) is exclusively for New Jersey. Therefore, their concerns have already been addressed. Likewise, we disagree with the concerns raised by EMF that a move of an LPFM station more than 5.6 kilometers (compared to less than 5.6 kilometers?) would "increase the potential of more interference" to full-service stations.[83] Again, even if an LPFM station moves, there are overprotected distance separation tables that must continue to be met. Interference on a longer move is more likely from a FM translator, which can use contours to "hug up" to another station's protected contour than it would be on a LPFM station, which is treated as nondirectional, uses distance separation and has a buffer zone. Likewise, it is REC's position that the NJBA and EMF arguments on minor moves can be dismissed as lacking merit.

D. Foothill Effect

37. REC Networks started in Southern California in 1984. Since then, the region has always been in our area of interest even though we are closer to Washington D.C. these days. Despite our "somewhat-near-D.C." presence, the Southern California counties are still an REC Networks special area of interest. With that, we have substantial and intimate knowledge of the terrain of Southern California and the issues that are faced by both LPFM and full-service stations alike. REC's recognition of *Foothill Effect* became apparent in the *Razorcake-Gorsky Press* case.[84] In *Razorcake*, the 40 dBu interfering contour of the proposed LPFM station did overlap the 60 dBu protected contour of EMF-owned KYLA, Fountain Valley, California. The argument made by EMF at the time was that if an LPFM station is requesting a second-adjacent channel station, that the LCRA's "any authorized radio service" clause in LCRA Section 3(b)(2)(A) also extends to not causing interference to a co-channel station.[85]

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[81] NJBA at 6-7.

[82] LPFM rules protect all New Jersey Class A FM stations as they are 6 kW at 100 meters HAAT, non-directional.

[83] EMF at 8.

[84] See *Razorcake-Gorsky Press, Inc.*, File No. BNPL-20131114AXZ (Razorcake) (granted June 30, 2016, permit cancelled June 30, 2019).

[85] See *Razorcake*, Memorandum Opinion and Order, 32 FCC Rcd. 2697 (Mar. 22, 2017, *recon. denied*, Aug. 16, 2017; *see* 32 FCC Rcd. 6593). See also *Centro Cultural de Mexico en al Condado de Orange et. al.*, Letter, File No.

38. REC Networks first addressed *foothill effect* in RM-11749 where we defined it as "the extremely large lobe of a service contour that is created by an LPFM station placed at a location overlooking a valley and at the foothills of a considerably large mountain range."[86] Because of *ex parte* rules, REC could not specifically address *Razorcake* but that was the inspiration for the proposed *foothill effect* rules in RM-11749.[87]

39. When reviewing the various LP-250 proposals that have been proffered by REC in RM-11749, RM-11810 and in *Comments* in this proceeding, there is a common theme. One of REC's main goals with creating LP-250 is to keep LP-100 as *status quo* as possible. Currently, §73.209(c) of the Full-Service FM rules states that permittees and licensees of FM stations are not protected from interference that may be caused by the grant of a new LPFM station or of authority to modify an existing LPFM station, except as provided in Subpart G.[88] This, of course, would have justified a grant of *Razorcake* as the LPFM station did meet the distance separations in Subpart G. When we reviewed the potential for some foothill stations if they were to upgrade to an LP-250 level of service, we had found some that would place a 40 dBu interfering contour inside an incumbent's protected contour where the current LP-100 level didn't. This is why we originally proposed a *foothill effect* backstop back in RM-11749. The goal of all of the REC petitions has been to try to get LPFM to a more level playing field with FM translators while still respecting the LCRA. In RM-11749, we required LP-250 stations to maintain the LP-100 distance separations, but we also used an "outer limit" by requiring for LPFM proposals with larger lobes that there is no prohibited contour overlap.[89]

40. With that said, we definitely appreciate, and we share EMF's concerns regarding *foothill effect* but at the same time, we must support leaving the LP-100 service as is from an outgoing interference issue. We are very receptive to EMF's concerns about *foothill effect* on the tentatively rejected items including

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BNPL-20131114BFE, *et. al*. (Jul. 20, 2015) (denied argument that second adjacent channel waiver requests extend "any radio service" protections to any co-channel facility.). Similar: See also *Greater Birmingham Ministries, Inc., et. al.*, Letter, File No. BNPL-20131113BUA, *et. al.* (Dec. 22, 2015) (Denied reconsideration claiming that an LPFM station requesting a second-adjacent channel waiver should use first-adjacent channel desired-to-undesired ratio because the incumbent station is operating digital and the digital sidebands are "spectrally first adjacent" to the proposed LPFM station.)

[86] RM-11749 at p. 17.

[87] See *Id.* at p. 19-20.

[88] 47 C.F.R. § 73.209(c).

[89] See RM-11749 at p. 19 (proposing a contour overlap backstop if an LPFM proposal has a lobe that exceeds 50 dBu of the class maximum distance); see also RM-11810 at ¶ 20 (part of the "§73.815 regime" proposal which called for the use of the "LP-10" minimum distance separation to comply with LCRA, contour overlap with a maximum facility of 250 watts at 30 meters HAAT); see also REC Comments at ¶¶ 41, 43, 54-58 (withdrawing the "§73.815 regime" concept and replacing with a plan similar to that used in RM-11749 using the "LP-100" minimum distance separations and a contour protection for any LP-250 application while maintaining most LP-100 stations with distance separation only.)

LP-250, translator relief and LPFM-to-LPFM short-spacing where we not only support contour studies, but we also support a §74.1204(a) interference remediation plan to further address any impacts caused by *foothill effect*.

E. TV Channel 6 protections by reserved band stations

1. Elimination of protections at analog sunset

41. We note that there is very wide support in the record for the elimination of protections to TV Channel 6 from FM broadcast facilities in the reserved band.[90] We further agree with Hope that for low-power and full-service TV Channel 6 stations that have already transitioned from analog to digital, the requirement to protect should be eliminated prior to the analog sunset date.[91] REC is concerned and slightly baffled by the position taken by Cal State Long Beach (CSULB). We recognize that CSULB is currently objecting to an analog LPTV channel 6 construction permit application that is proposing to operate 3 kW from Southern California's main antenna farm. CSULB's comments appear to be more geared towards imposing new restrictions on channel 6 stations to protect NCE stations up to Channel 205 and vice versa.[92] CSULB does raise a good point on how LPTV is exempt from §73.682(a)(15) of the rules which limits the aural transmitter to 22% of the peak radiated power of the visual transmitter in an analog setting.[93]

2. FM6 aka "Franken-FM" stations

42 REC supports the elimination of analog carriers by LPTV stations at the analog sunset, a position also shared by NPR, who seems to quietly suggest that Channel 6 (82-88 MHz), when compared with an FM6 station, could also be used for up to 30 FM broadcast channels, a position that REC supports, but is out of scope for this proceeding.[94] REC disagrees with the LPFM Engineers that LPFM stations should be subject to some form of "second-adjacent channel" protection towards FM6 stations.[95] LPTV stations are not considered radio services and therefore is not subject to the "prescribe protection" clause of LCRA §2(a)(1).

[90] LPFM Engineers at 3-4, NJBA at 5-6, EMF at 2-4, Sibert at 4-5, NPR at 2-4, Jose Garcia at 1-2, Hope Christian Church of Marlton (Hope) at 1-2, Four Rivers Community Broadcasting, *et al* at 1-2, Bridge of Hope, Inc. at 1-2, Steven White at 5.

[91] Hope at ¶ 5.

[92] CSULB at ¶ 3.

[93] CSULB at ¶ 6. (A 3 kW aural LPTV facility located on many of the Southern California hilltops, including the most used one would create an FM facility that would exceed that of a Class B station, whereas with the 22% rule, the station would be limited to a maximum of 0.66 kW would create a 54 dBu service contour of 64.1 km, which would be near the maximum for a Class B station, which is 65.1 km.)

[94] NPR at 5-7.

[95] LPFM Engineers at 2-3.

In addition, the language in LCRA §3(b)(2)(A) states that an LPFM station using a second-adjacent waiver must make a showing that the proposal will not cause any interference to any *radio* service.[96] Even if FM6 stations operate in a hybrid mode, they are still low power television stations operating under television rules, not radio rules. Simply put, they are not radio stations. The Commission could address this best by simply not permitting these hybrid operations after analog sunset.[97]

F. Emergency Alert System

43. Those who also commented on the Commission's inquiry about Emergency Alert System (EAS) had mixed opinions. Steven White stated there should be no changes[98] where the LPFM Engineers and Jeff Sibert have some differing opinions that should be taken into consideration.

44. *Lack of awareness by LPFM stations* – Jeff Sibert attributes the low participation by LPFM stations during the National Periodic Tests (NPT) due to the lack of awareness and communication by the Commission where it comes to communicating updates about the EAS, especially when many stations may have invalid or no email address listed with the Commission and that because LPFM stations are less likely to have retained counsel, they may not always be informed of upcoming events and policy changes.[99] REC agrees with Jeff Sibert on these points. As recognized by many, including the Commission, principals of LPFM stations are more likely to be much less experienced than principals of other NCE or commercial stations. When working with LPFM stations over the past several NPTs, we have experienced some LPFM stations that may have been set up by an engineer who is no longer affiliated with the station and now those who run the station are not able to complete simple tasks such as to access their EAS logs. This obviously worries us, especially if an LPFM station faces an inspection.

45. *Expenses related to EAS purchase and maintenance* – Both Jeff Sibert and the LPFM Engineers go into great detail on the very high costs associated with EAS. When you look at the costs related to the initial purchase and the required software updates including FEMA required digital certificate updates, the LPFM Engineers are exactly right that the costs for a certified lab-tested EAS decoder exceed those of a

[96] LCRA §3(b)(2)(A)

[97] REC concedes that in the proposed concept for FM6 "hybrid" operation, the LPTV station could continue to operate one or more video services with full video and audio while simultaneously operating an analog carrier. If the Commission is to maintain the FM6 hybrid operations after the analog sunset, we must insist on specific maximum operating parameters such as imposing a maximum suppressed aural carrier compared to the digital ERP as well as imposing further controls on the aural carrier to assure that FM6 hybrid facilities do not surpass a certain class of FM broadcast station.

[98] Steven White at 5.

[99] Sibert at 9-11.

certified lab-tested FM transmitter, the heart of any LPFM station.[100] Jeff Sibert also touches on the issues related to required software updates.[101] REC concurs with Sibert and the LPFM Engineers on the costs of EAS. We frequently get inquiries from LPFM stations that receive "hand me down" equipment in order to determine if the equipment can be used in today's environment. We also feel that the predatory captive market behavior of the EAS equipment manufacturers have played a role in this. For example, at the time of this writing, the current FEMA digital certificate used to authenticate CAP IPAWS messages is going to expire and new keys are being distributed by FEMA to the manufacturers. REC owns and operates a Digital Alert Systems DASDEC II (DASDEC) in our lab environment with version 3.1 software. REC was notified by third-parties that a FEMA certificate update was required for DASDEC users. For DASDEC users, a simple visit to the Digital Alert Systems website to download a simple patch at no change is all it took to remain up to date.[102] Meanwhile, for those who own Sage ENDEC equipment, the new digital certificate will be included in their Rev95 release, which is going to put out Sage owners $349.00.[103] Only those who purchased their equipment after a certain date will be able to get the digital certificate (as part of Rev95) at no charge. Some LPFMs may have to conduct fundraisers just to pay for this added expense.

46. *"Open source" and non-certified EAS equipment* – Like REC, both the LPFM Engineers and Jeff Sibert bring up the possibility of open source EAS and Jeff Sibert further discusses the use of older EAS equipment, presumably for over-the-air EAS reception only as well as brings up the open source *Open Broadcaster* software that could turn any Raspberry Pi and some external equipment into a functional EAS decoder that for the less encrypted Canadian system, can also decode CAP messages.[104] REC totally agrees that for decode-only EAS users, there must be less expensive options available and that these less expensive and open source methods must include access to Open IPAWS. The 2019 NPT has clearly demonstrated that an over-the-air alerting system simply does not work. During the 2019 NPT, we had received reports from stations in various regions of the country where alerts were distorted beyond usability and in some areas, they were never received. At REC Networks, located in Maryland's Lower Eastern Shore Operational Area, the quality of the messages from our LP-1 as well as from our LP-2, which already has existing sound quality

[100] LPFM Engineers at 5-6.

[101] Sibert at 10.

[102] https://www.digitalalertsystems.com/DAS_pages/resources_fsb.html

[103] https://www.bswusa.com/EAS-Encoders-and-Decoders-Sage-DIGITALENDEC-REV95-Software-Update-P14463.aspx

[104] Sibert at 11, LPFM Engineers at n. 9.

issues as noted in received RMTs, was completely unusable for any listener needing to hear what would be our country's most critical messages being delivered.[105]

47. REC totally agrees that our that our IPAWS system must be secure from *receiving* false alerts. Other than false alerts sent out about zombies[106], most of the false alerts, such as those that took place in Hawaii and Guam were purely human error. Open IPAWS for first responder agencies and others responsible for *originating* alerts must be highly secure however, that level of security is not necessary for the "output" of Open IPAWS for broadcasters and other EAS participants. There should be no reason why FEMA would want to restrict the dissemination of emergency alert information using any delivery method and therefore, there should be no reason why FEMA must restrict the reception of alerts to only those with memorandums of understanding with that agency.

48. *LPFM is at the end of the EAS food chain* – Because LPFM is a "decode only" service, they are never expected to encode alerts nor service any other "downstream" EAS participants. As Jeff Sibert correctly notes in Minnesota and REC has observed in other states is that LPFM stations are not normally listed in statewide EAS plans.[107] This also means that LPFM stations are less likely to receive any updates to the state plan or potentially even have access to the state plans based on other proposals by the PSHSB to "block" public access to statewide plans for some false-sense of national security.[108] This is why we need to re-examine the role of EAS for LPFM, LPTV and Class D FM stations that are currently decode only and specifically the equipment that these stations should be permitted to use.[109] For example, since decode-only stations are not required to broadcast a header or "EOM", there should not be a lab test requirement for the equipment to determine the ability for that equipment to generate the header or "EOM". In other words, there should be no reason why a decode only station, that will receive its alerts from a LP-1 or LP-2 station within the same operational area should even need access to CAP, let alone the need to decode headers as long as it can decode the attention signal (like older EAS/EBS equipment).

49. *Shared EAS units for time share LPFM stations* – LPFM is very unique in the number of "modern" time share stations the service currently has. REC estimates that there are over 60 LPFM stations in

[105] https://soundcloud.com/michelle-bradley-3/2019-natitional-eas-test-as-heard-in-riverton

[106] https://www.huffpost.com/entry/krtv-fake-zombie-alert_n_2665469

[107] Sibert at 10.

[108] See *Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System,* Report and Order, 33 FCC Rcd. 3627 (2018) at ¶¶ 15-17.

[109] 47 C.F.R. §11.11(a).

a time share agreement.[110] LPFM Engineers brings up a serious question of why (or whether) LPFM stations that are in a time-share agreement are required to have separate EAS decoders for each of the time share participants, especially if they share the same studio and/or transmission equipment.[111] REC notes that here in the Lower Eastern Shore (Maryland) Operational Area, our LP-2 stations are WSCL and WSDL, two commonly-owned NCE stations that carry distinct programming. WSCL and WSDL operate from different sites so they put varying signals over different parts of the Delmarva Peninsula. Despite being different stations and simultaneously operating as Local Primary assignments (where the headers matter), they are allowed to share the same decoder/encoder as evidenced by their messages appearing as originating from "WSCLWSDL".[112] As LPFM, LPTV and Class D FM stations are "decode only" and at the end of the EAS "food chain" and therefore not required to encode a header, there should be no reason why an LPFM station that shares the audio chain with another time-shared LPFM station should be required to purchase a separate EAS unit. LPFM and other decode-only EAS participants need revised guidance or a declaratory ruling on this specific issue.

50. *REC supports alerting, but we need a "pause"* – For the 2019 NPT, REC's Michelle Bradley worked very closely with Maureen Bizhko in PSHSB as well as traveled to Washington, DC on July 9, 2019 for an EAS stakeholders meeting in advance of the 2019 NPT. REC is serious about EAS, but at the same time, we have to address the issues that are being expressed by LPFM stations. The main issues that we hear about include the expense of equipment, especially around this time when Sage is mandating a $350 update and DASDEC is recommending (but not yet mandating) a $500 update as well as the usefulness for EAS in a hyperlocal environment, especially for LPFM stations located in large counties like Los Angeles and San Bernardino, California, where, for example, a weather incident 60 miles away would not concern the area of the LPFM station.[113]

51. Until the Commission, FEMA, EAS manufacturing (including open source) and LPFM stakeholders can come together to discuss this issue, we do need a "pause" on enforcement of EAS regulations for LPFM and other decode-only participants. REC's positions on this issue are EAS participants that are

[110] https://recnet.net/timeshare.php

[111] LPFM Engineers at 5.

[112] The EAS protocol can handle up to 8 characters for EAS participant identification (The LLLLLLLL code). See 47 C.F.R §11.31(c).

[113] For parts of the country with smaller counties, such as here in Maryland, the FIPS regions are rightsized and the alerts are more relevant. For example, on October 31, 2019 at 11:10 PM EDT, the EAS at REC Networks received a tornado warning (TOR) for Caroline, Kent, Queen Anne's and Talbot Counties in Maryland. This was received through both our LP-1 and LP-2 stations (WQHQ and WSDL). The closest of those counties to REC is Talbot, which would be about 16 miles from REC here in Riverton, MD. If we had an LPFM or small NCE station here at REC, we would have opted to carry that message.

decode only should be able to voluntarily waive the requirement to directly monitor Open IPAWS as long as the decode-only EAS participant is able to obtain pre-authenticated alerts from LP-1 and LP-2 stations and forward all EAS messages received or selectively forward messages based on the FIPS codes encoded in the header that are appropriate for the county or counties that the decode-only station serves. LPFM stations want to participate but they can't justify the predatory and captive marketing taking place in the EAS equipment industry, especially for stations that can simply decode over the air and not need access to Open IPAWS (as they will get that from their LP-1/LP-2). So, until we ever had a meeting of the minds, some new agreements and potentially some new rules and/or waivers, we feel that is only appropriate for a "pause" on EAS enforcement directed at the "decode-only" stations.

G. Silent LPFM stations

52. Over the past few months, REC had been discussing with Audio Division staff the fact that §73.850 does not contain any language that requires LPFM stations to report their silence in a manner consistent with full-service and FM translator facilities.[114] We acknowledge that Steven White had taken a similar position.[115] REC's position that this, like the lack of a public notice rule for LPFM were mere oversights in the original 2000 rulemaking for the sake of simplicity and we feel that it would be appropriate for the Commission, on their own action, to amend §73.850 to add similar silent station reporting requirements with a grace period for facilities currently not in compliance to report their current status.

H. Other issues raised

53. *Type accepted/type verified vs. certified transmitters for LPFM* – Several commenters had expressed concerns related to the requirement of certified transmitters in the LPFM service.[116] REC has been hesitant to take a position to also request the lifting of the requirement for certified transmitters due to the Commission's turning a blind eye to the mass marketing of uncertified equipment, distributed mainly through "marketplace" websites such as Amazon.com, eBay and even Walmart.[117] These uncertified transmitters are not stable and may not be provide the appropriate out of band suppression thus resulting interference to aeronautical and other safety of life communications. At the same time, we have also seen LPFM stations

[114] See 47 C.F.R. §73.561(d) (noncommercial educational FM broadcast stations), 47 C.F.R. §73.1740(a)(4) (commercial FM broadcast stations) and 47 C.F.R. §74.1263(c) (FM translator and booster stations).

[115] Steven White at 5.

[116] Steven White at 4, LPFM Engineers at 7, Dana Puopolo at 1.

[117] REC has received inquiries from a small number of LPFM stations considering the purchase of this uncertified equipment due to the price and REC had to warn them about the quality of the equipment and was successful in dissuading the station from purchasing the illegal equipment. Examples of uncertified items being sold: https://www.amazon.com/Transmitter-Broadcast-Adjustable-Transmission-Polarized/dp/B00N9MU588/ https://www.amazon.com/CZH-Professional-Transmitter-87-108Mhz-Antenna/dp/B00OPPOCPU

obtain new or used transmitters from reputable manufacturers that end up not being certified either because the equipment is either a "hand me down" from another broadcast station or like in a recent case, the transmitter sold was mistaken for a certified unit when it is not.[118] We are also concerned that some older equipment may not have the functionality to properly monitor the operation of the transmitter resulting in the automatic shutdown of the transmitter in an out-of-tolerance condition. Otherwise, REC's position is that the certified transmitter policy came out of a level of fear and paranoia that was spurred by pirate radio activists in the 1990s and a fear that many LPFM stations would be operated by pirates of the past. Our position can pivot upon action by the Commission and the Department of Justice to crack down on Chinese and other imported uncertified transmitters being mass marketed to consumers.

54. *Second-adjacent channel LPFM/translator harmony* – LPFM Engineers propose removing the requirement that LPFM stations protect FM translators on second-adjacent channels.[119] REC's interpretation of the LCRA suggests that the elimination of all protections from LPFM stations to FM translators would violate Section 2(a)(1) of the LCRA.[120] If the Commission interprets the law differently, then we would support the elimination of second-adjacent channel protections to FM translators. In the alternate, REC would support the imposition of a second-adjacent channel protection, which can be waived using the *Living Way* method towards LPFM stations. In this case, all existing overlapping translators would be grandfathered at their current site however they would be required to not increase overlap as a part of a minor or major change. This would especially be the case of Auction 99 and 100 translators which were considered "new" licenses under Section 5 of the LCRA. Section 5(3) of the LCRA requires that FM translator stations, FM booster stations and low-power FM stations remain "equal in status".[121] By permitting an FM translator's interfering contour to overlap an LPFM station's protected contour, the FM translator is bestowing a "primary" service to that LPFM station and even though it would not result in a displacement, it could result in new restrictions on the LPFM station's ability to move locations.[122] REC feels that this issue deserves a complete record in a *Further Notice of Proposed Rulemaking* in this docket.

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[118] See *International Crusade of the Penny*, Notice of Violation, File No. EB-FIELDWR-19-00028904 (EB, Aug. 9, 2019). (Station requested a certified transmitter from the vendor, the vendor changed to a different uncertified transmitter without informing the station. The station did not know they had an uncertified transmitter until an inspection several years later. While they were not required to, the manufacturer replaced the transmitter with a certified one and the station is now in compliance.)

[119] LPFM Engineers at 6.

[120] See LCRA §2(a)(1) ("The Federal Communications Commission shall modify the rules authorizing the operation of low-power FM radio stations, as proposed in MM Docket No. 99-25, to—prescribe protection for co-channels and first and second-adjacent channels...")

[121] LCRA §5(3).

[122] See §73.807(d).

55. *Miscellaneous issues* – Finally, we disagree with Jeff Sibert on proposals regarding the ability for LPFM stations to air commercials and prohibitions on the "sale" of an LPFM license.[123] REC's positions regarding the ability for LPFM stations to carry commercials is well known in our comments in opposition to RM-11753.[124] The ability for LPFM to carry commercials would trigger a domino effect of federal statutes that would jeopardize our strict national ownership rules[125], introduce large corporate applicants and would result in auctions for settling mutually exclusive applications while shutting out competing applications that are truly noncommercial educational.[126] Likewise, we do not support the ability for an LPFM station to engage in an assignment or transfer where the consideration exceeds the depreciated retail value of the equipment and other tangible goods.[127] We note too that this subject is out of scope for this proceeding and would be more appropriate being discussed in MB Docket 19-3. REC does agree with Jeff Sibert that the Commission should publish a list of FM stations that they consider to have a radio reading service if they plan to proactively enforce this rule.[128] If the Commission wishes to end proactive enforcement, then they need to go on record and invalidate the list published in Appendix D of the *MO&O on Reconsideration* as many of those stations no longer carry radio reading services and allow stations still utilizing reading services to file an *Informal Objection* or *Petition to Deny* against LPFM proposals that would violate the LCRA.[129]

V. CONCLUSION

56. Like Tom & Jerry, Elmer Fudd & Bugs Bunny and for that matter Boris & Bullwinkle, this cartoonish cat-and-mouse game that "Mr. Nabb" is playing with the LPFM service has been going on for over 20 years and that's 20 years too long. Many of the fears that the NAB has raised over these years had never come to fruition and many of their other reasons to delay any progress for LPFM stations have come and past and are now moot. With all of the filing windows for LPFM and FM translators now out

[123] Jeff Sibert at 12-13.

[124] See Comments of REC Networks, RM-11753 (Aug. 26, 2015) at ¶¶ 2-18.

[125] Pub L. No. 104-104, 110 Stat. 56 (1996) at § 202.

[126] See Comments of REC Networks, RM-11753 (Aug. 26, 2015) at ¶¶ 4-6; citing *Implementation of Section 309(j) of the Communications Act-Competitive Bidding,* Report and Order, 9 FCC Rcd. 2348 (1994) at ¶ 3; *Implementation of Section 309(j) of the Communications Act-Competitive Bidding for Commercial Broadcast and Instructional Television Fixed Service Licenses and Issues Regarding Comparative Broadcast Hearings,* Report and Order, 13 FCC Rcd. 15920 (1998) at ¶ 1.

[127] Comments of REC Networks, RM-11753 (Aug. 26, 2015) at ¶¶ 22-23.

[128] See Id. at 8-9.

[129] See *Creation of a Low Power Radio Service,* Memorandum Opinion & Order on Reconsideration, 15 FCC Rcd. 19208 (2000) at 22-24 and Appendix D.

of the way and the most stable spectrum landscape in quite a few years, now is the time for the Commission to not only listen to NAB, NJBA and EMF but also listen to the many professionals who have been advocating for LPFM and bring up for consideration, REC's revised proposal for LP-250 which does not involve the controversial "§73.815 Regime" as well as the use of contours to show protection to FM translators and other LPFM stations, all with an FM translator style interference remediation backstop. Despite the Commission's previous conclusion, a lot has changed since 2012 and with that, we feel that LP-250 deserves a full record without the distraction of competing service classes like there was in the *Fourth NPRM*. REC continues to call on the issue of bringing up LP-250, FM translator relief and LPFM short-spacing to a *Further Notice of Proposed Rulemaking* in this docket so it will have a full-record and that LPFM can be afforded a full Commission interpretation of the LCRA. LPFM stations across the nation are experiencing coverage issues, even within their current 3.5-kilometer service areas. Let's give LP-250 a chance.

57. The record also clearly shows that the time is ripe for the elimination of the TV channel 6 protection requirements and we support the immediate removal of protection requirements towards TV Channel 6 stations that have already converted to digital. This will give a head-start to existing NCE-FM stations to make their modifications such as changing directional patterns, increasing power or adding horizontal polarity prior to the announcement of a future filing windows for new NCE full-service stations and new LPFM stations. We hope these *Reply Comments* further clarify the actual extent of the deployment of directional antennas in LPFM. The open-ended EAS question did draw some very insightful commentary and does put into question the role of LPFM stations in EAS, especially given the expense of equipment and the hyperlocal nature of stations. REC also supports the codification of FM boosters for LPFM stations and the expansion of minor change distance. We also join the call on the Commission to address the loophole in the Rules in respect to silent LPFM stations.

58. REC thanks all of the participants in this proceeding, including those who oppose the proposals for making their voices heard. We still have a lot of work to do to improve LPFM to make it more community focused and higher quality in a manner that prevents harmful interference and is consistent with the LCRA. REC also looks forward to a future filing window for new full-service noncommercial educational stations followed by a future filing window for new LPFM stations.

Respectfully submitted,

/S/
Michelle Bradley, CBT
Founder
REC Networks
11541 Riverton Wharf Rd.
Mardela Springs, MD 21837
https://recnet.com

November 3, 2019

APPENDIX A

NEW JERSEY LPFM STATIONS AND THEIR POTENTIAL LP-250 UPGRADE STATUS

LPFM stations from the first window (not subject to LCRA §7(6))

WUPC-LP – Arrowhead Village, NJ – *Radio Alerta* –250w
Can only upgrade to LP-250 if WDXP-LP does not upgrade.
(WDXP-LP is operating at minimum power due to second-adjacent channel-unlikely to upgrade)
Power limited to 190 watts ERP towards WDXP-LP.
No alternate channels.
Translator relief potential channels 100.7, 104.7 and 107.9.

WZFI-LP – Bridgeton, NJ – *Azariah Communications* – 201w
Meets distance separation for upgrade.
Upgrade ability may be limited due to second-adjacent contour overlap with WUSL at LP-100.

WCFA-LP – Cape May, NJ – *Center for Community Arts, Inc*. – 212w
Can upgrade on channel.
No predicted inward interference

WMDI-LP – Lakewood, NJ – *American Institute for Jewish Education* – 250w
Can upgrade on channel.
Does not meet minimum distance to W300CZ (co-channel).
Using translator relief, can operate 185 watts in direction of W300CZ – licensed facility.
Can operate 250 watts in direction of W300CZ – construction permit facility.

WMRH-LP – Linwood, NJ - *Mainland Regional High School* – 250w
Can upgrade on channel.
May receive interference from WDEL-FM. There is 22km of separation between the upgraded WMRH-LP 40 dBu interfering contour and WDEL's 60 dB protected contour.
Second adjacent channel short-spaced to W267BP places an 85 dBu field strength at WMRH-LP.
New study required to show that 125 dB interfering contour does not reach populated areas.

WLOM-LP – Ocean City, NJ – *Coastal Christian Church* - 237w
Short-spaced FM translator W223CO (first-adjacent).
Translator relief: must limit to 160w towards W223CO. Clears all others at 237w.

WPOV-LP – Vineland, NJ – *Calvary Chapel of Vineland, Inc*.- 92w
Can upgrade on channel.

LPFM stations from the second window (subject to LCRA §7(6)).

WCNU-LP – Bridgeton, NJ – *Tri-County Community Action Agency, Inc.* – 250w
Upgrade may be blocked – on edge of 54 dBu contours of WIOQ & WMGK.
May receive interference from WRFY.

WXRM-LP – Cape May Court House, NJ – *South Jersey Christian Academy* – 212w
Can upgrade on channel.
Second adjacent short-spaced to WZXL at 86 dBu – new study required.
May receive interference from WBEB (co-channel).

WCFT-LP – Dover, NJ – *Calvary Chapel Morris Hills* – 9w
Upgrade limited to 7 watts towards W300DR(CP).
Second adjacent channel short-spaced to WBLS at 61 dBu (new study required).

WRWL-LP – Galloway, NJ – *Word of Life Christian Fellowship* – (133w) 100w
Due to IF short-spacing with WFPG, upgraded ERP limited to 100 watts.
Second adjacent channel short-spaced to WPUR at 81 dBu (new report required)
Upgrade may be further limited by WRML-LP.

WRML-LP – Mays Landing, NJ – *Atlantic Cape Community College* – 190w
Limited to 185w towards WRWL-LP if they do not upgrade.
May receive interference from (co-channel) W300AO and WPPZ.

In order for both WRWL-LP and WRML-LP to upgrade, WRWL-LP would be limited to 64w towards WRML-LP and WRML-LP would be limited to 159w towards WRWL-LP.

WXDP-LP – Hazlet, NJ – *Hazler Hispanic Community Radio*
No upgrade.
This station is currently running minimum power (15w) in order to meet second-adjacent short-spacing with WFAN-FM and WNEW-FM at 62 dBu. This station would never be able to upgrade in place.

WNJI-LP – Kearney, NJ – *Gospel Light Prayer Church, Inc.*
No upgrade.
Time share with WZYE-LP.
Upgrade not possible due to W240EE (co-channel).
This station is running reduced power (70w @ 23m HAAT) due to second adjacent channel.
No alternate channels.

WZYE-LP – Maplewood, NJ – *Caribbean Sports International, Inc.* – 100w
Time share with WNJI-LP.
Second-adjacent channel short-spacing with WPLJ & WXNY (both 78 dBu)
Short-spaced to W240EE (translator relief: contours do not overlap).
Contour overlap with W240CY at 100w. Upgrade possible if power is reduced to 85w to W240CY.

WRSK-LP – Newton, NJ – *Sussex County Community College* – 162w
May upgrade on channel.

WJUI-LP – Ramtown, NJ – *American Center for Civil Justice, Religious Liberty & Tolerance* – 250w
May upgrade on channel.
May receive interference from WRFF (first-adjacent channel).

WSRX-LP – Vernon, NJ – *Skylands Radio Cooperative* – 250w
May upgrade on channel however due to foothill effect, 100w has a contour overlap with WQET-LP (Middletown, NY). If WQET-LP does not upgrade, a Nicom BKG at 180 rotation will not increase overlap to WQET-LP.
WQET-LP is not necessarily able to upgrade due to contour overlap with both WSRX-LP (at 100w) at WELV-LP (Ellenville, NY). If the Commission does not allow the use of directional antennas, then this station can't upgrade.
May receive interference from (co-channel) WEBE and WKRF.

WYNE-LP – Wayne, NJ – *Preakness Valley United Reformed Church* – 70w
Short-spaced and contour overlap with W240EE. This is a foothill effect station that also overlaps the protected contour of the WNJI-LP/WZYE-LP time-share group. Using proposed rules for translator relief and LPFM short-spacing, 65 watts into a Nicom BKG at rotation 3 degrees would reduce overlap to the LPFMs and W240EE.
Potential translator relief channel: 94.3

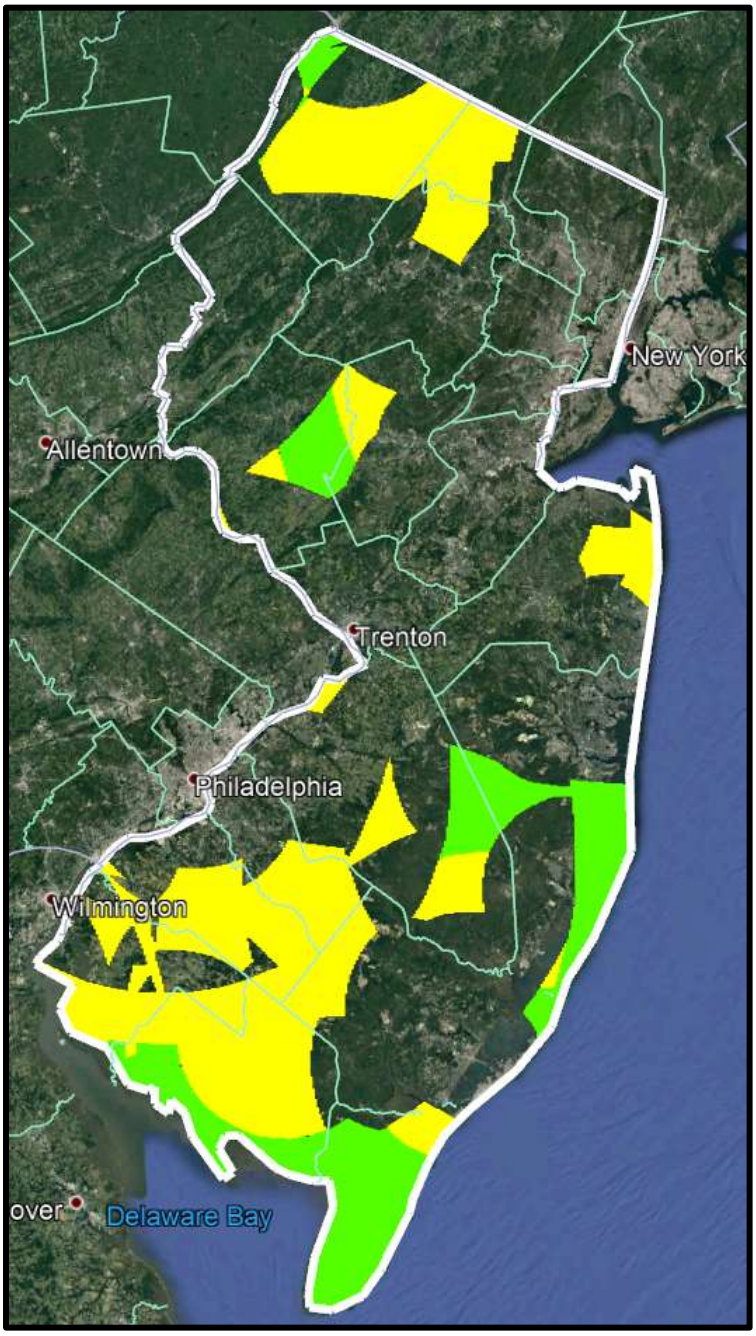
WSBP-LP – Wood Ridge, NJ – *South Bergen Community News*
Can't upgrade on channel due to (co-channel) W232CY and W232AL.
Operating at reduced power due to second-adjacent short-spacing to WNSH and WNYC-FM.
No alternate channel.

WOLD-LP – Woodbridge, NJ – *SRN Communications* – 43w
Can't upgrade on channel due to (co-channel) W300DR and W300CZ(CP) (distance separation and contours). Also, being 65 dBu second-adjacent will pose further difficulty for upgrade.
No alternate channel.

APPENDIX B

FUTURE LPFM OPPORTUNITIES IN NEW JERSEY

Based on a REC CIRCLES report conducted as of close of business, October 24, 2019. Areas shaded in yellow indicate areas where there is at least one LP-100 channel that meets §73.807 minimum distance separation and also requires a waiver showing for a short-spaced second-adjacent channel station. Areas in green also meet §73.807 minimum distance separations but does not require a second-adjacent channel waiver request. Actual areas may vary based on incoming interference, antenna location and field strengths of short-spaced second adjacent channel stations.

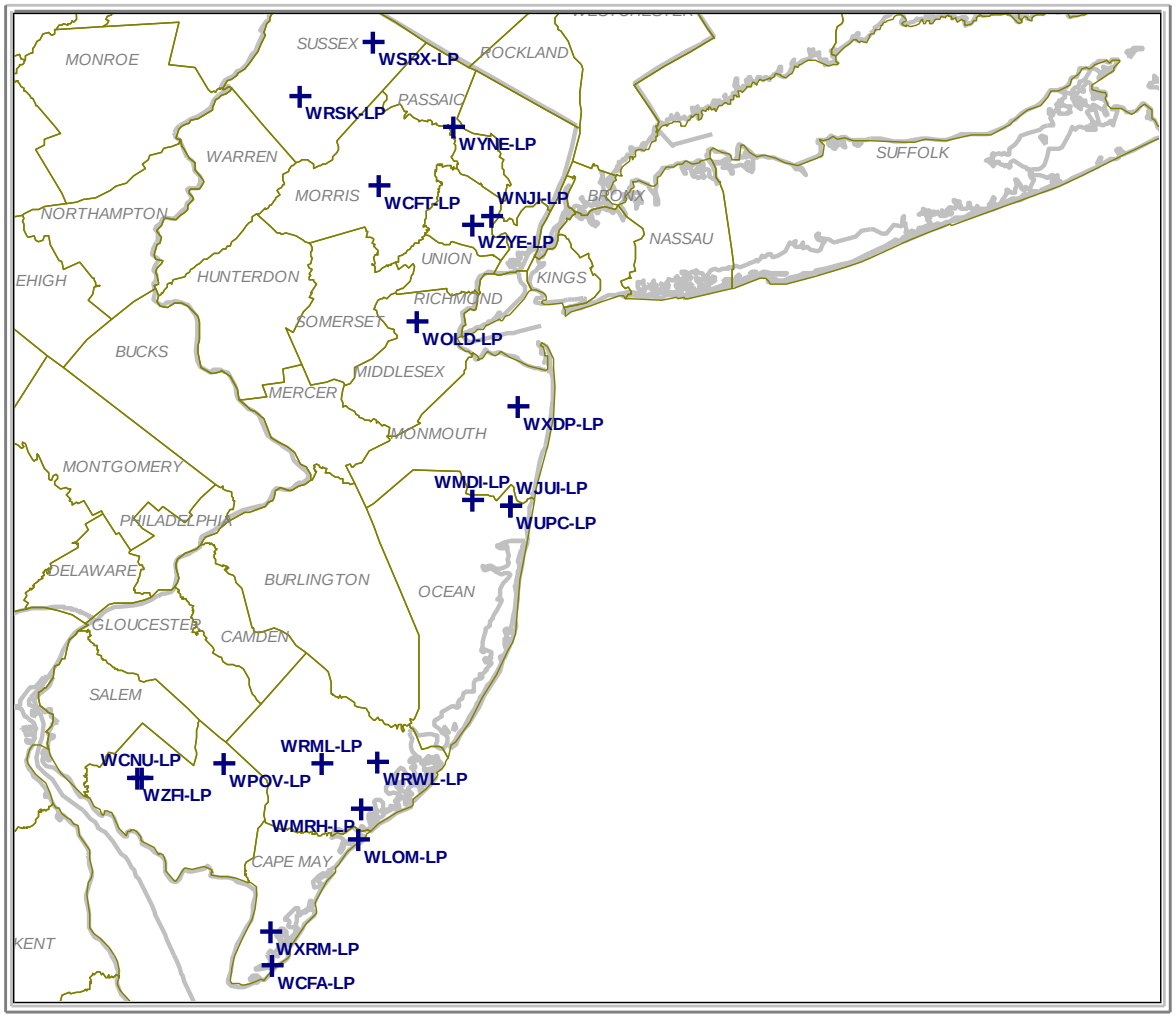


APPENDIX C

MAP OF LPFM STATIONS IN NEW JERSEY

REC Networks 202 621-2355 Sunday, October 27, 2019

LPFM stations in the State of New Jersey



Map Scale: 1:1516059 1 cm = 15.16 km V|H Size: 264.53 x 299.36 km

APPENDIX D

INTERFERING CONTOUR MAPS OF NEW JERSEY LP-100 STATIONS AND THEIR UPGRADES TO LP-250

The following contour maps show, in most cases, the interfering contours of a New Jersey LPFM station and the protected contours of other broadcast stations.

For the subject LPFM station, thin contours indicate LP-100 where thicker contours indicate LP-250.

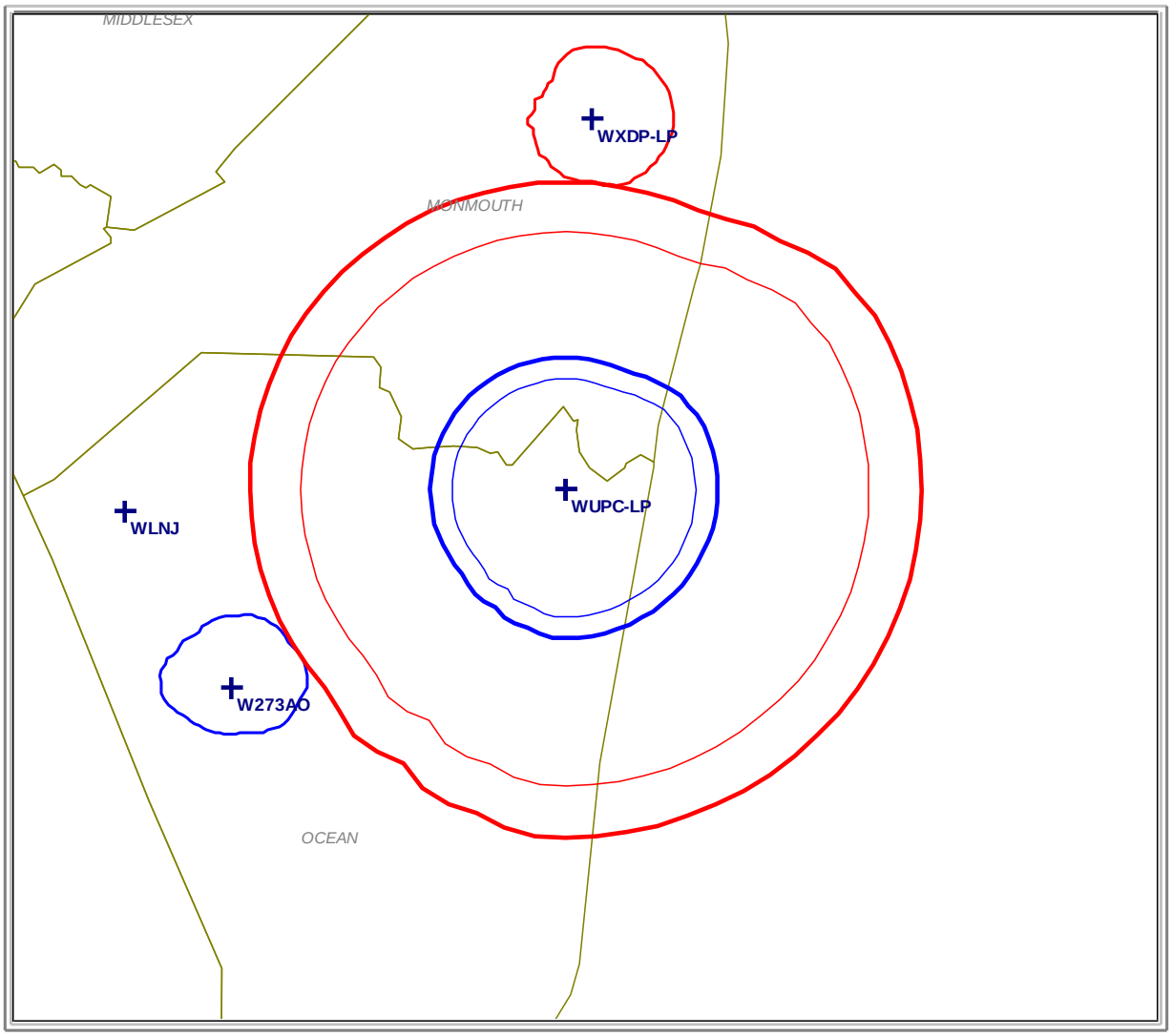
These maps also take into consideration REC's proposed FM Translator Relief and LPFM Short Spacing rules in respect to translators and LPFM stations that are not the minimum proposed distance separation from the subject LPFM station.

As noted, some LP-250 eligible upgrades would result in a new prohibited overlap with an FM translator or with another LPFM station and thus a power reduction and/or a simple directional antenna is required. These maps take those reductions into consideration.

On these maps, the color red indicates a co-channel relationship, blue is used for first adjacent and black is used for second adjacent channel. On second adjacent channel, some maps indicate the field strength of the short-spaced station at the transmitter site (see Appendix A *supra* for details). The color green indicates the interfering contour of other stations in order to demonstrate incoming interference on that channel.

REC Networks 202 621-2355 Saturday, October 26, 2019

WUPC-LP

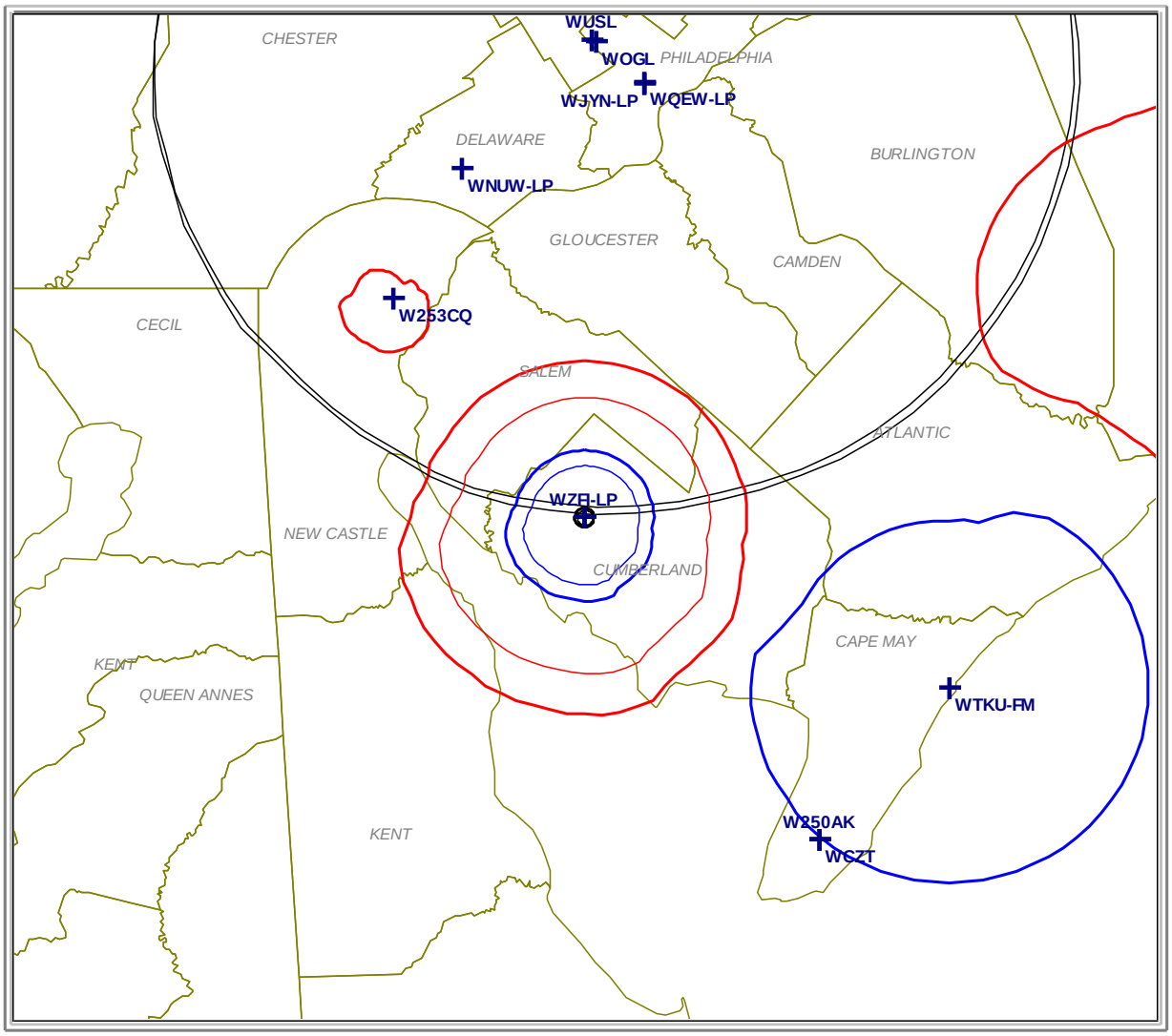


Limited to 190w towards WDXP-LP

Map Scale: 1:405706 1 cm = 4.06 km V|H Size: 72.24 x 80.11 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WZFI-LP

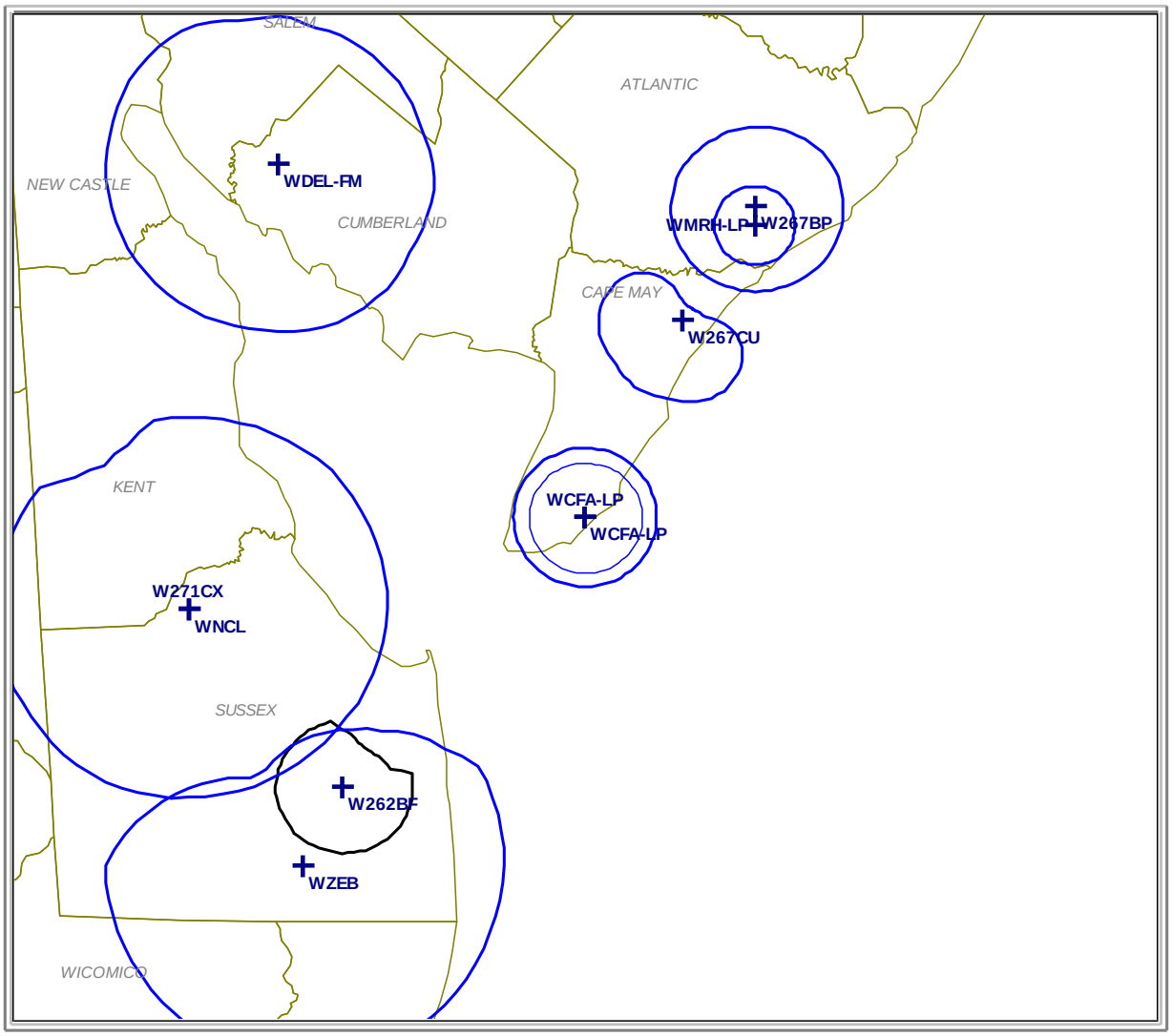


Upgrade less likely due to second-adjacent channel

Map Scale: 1:811412 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WCFA-LP

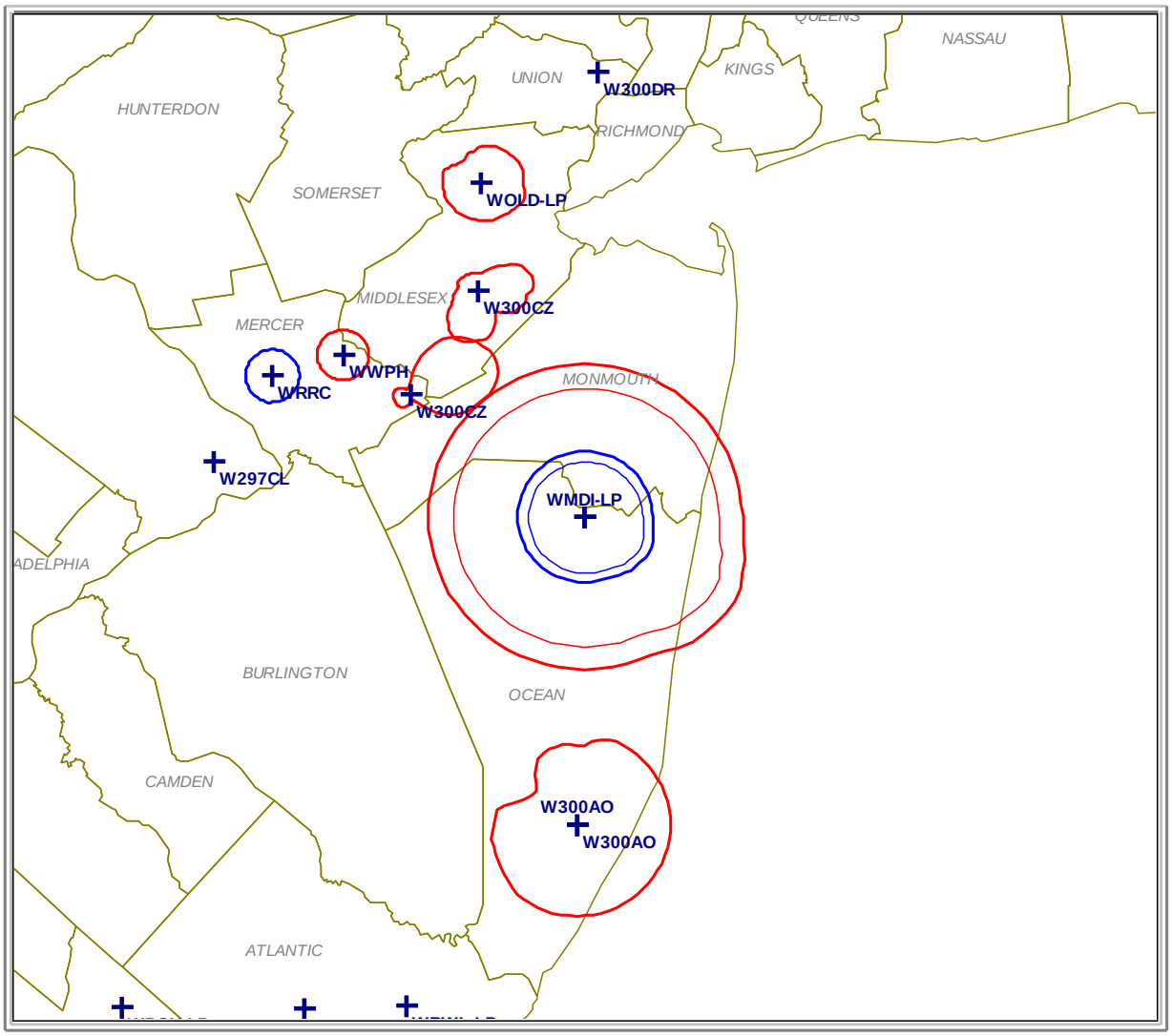


Upgrade to 212w ERP

Map Scale: 1:811412 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WMDI-LP

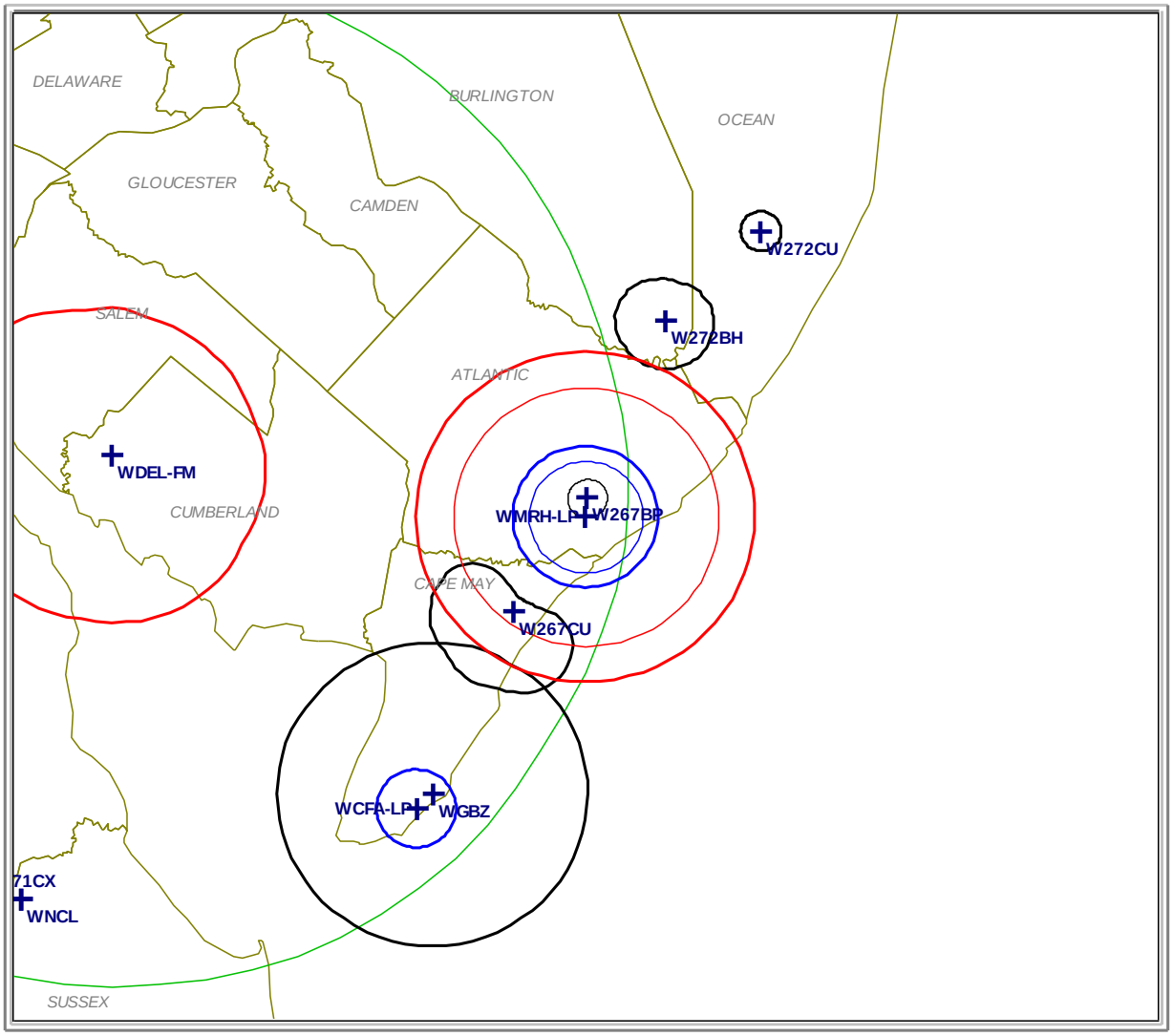


Limited to 185w towards W300CZ (LIC)

Map Scale: 1:811412 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WMRH-LP

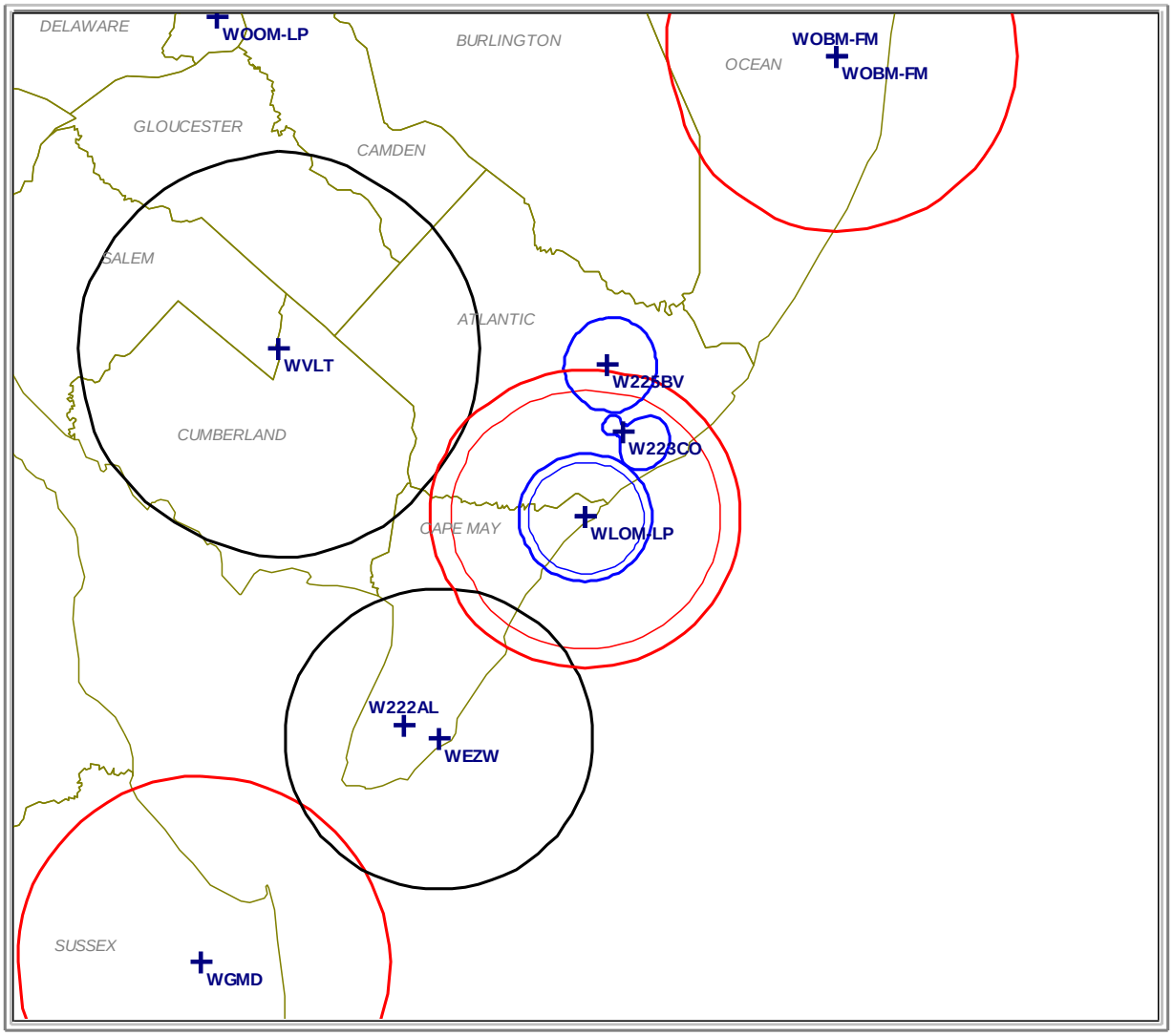


Can upgrade to 250w

Map Scale: 1:811412 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WLOM-LP

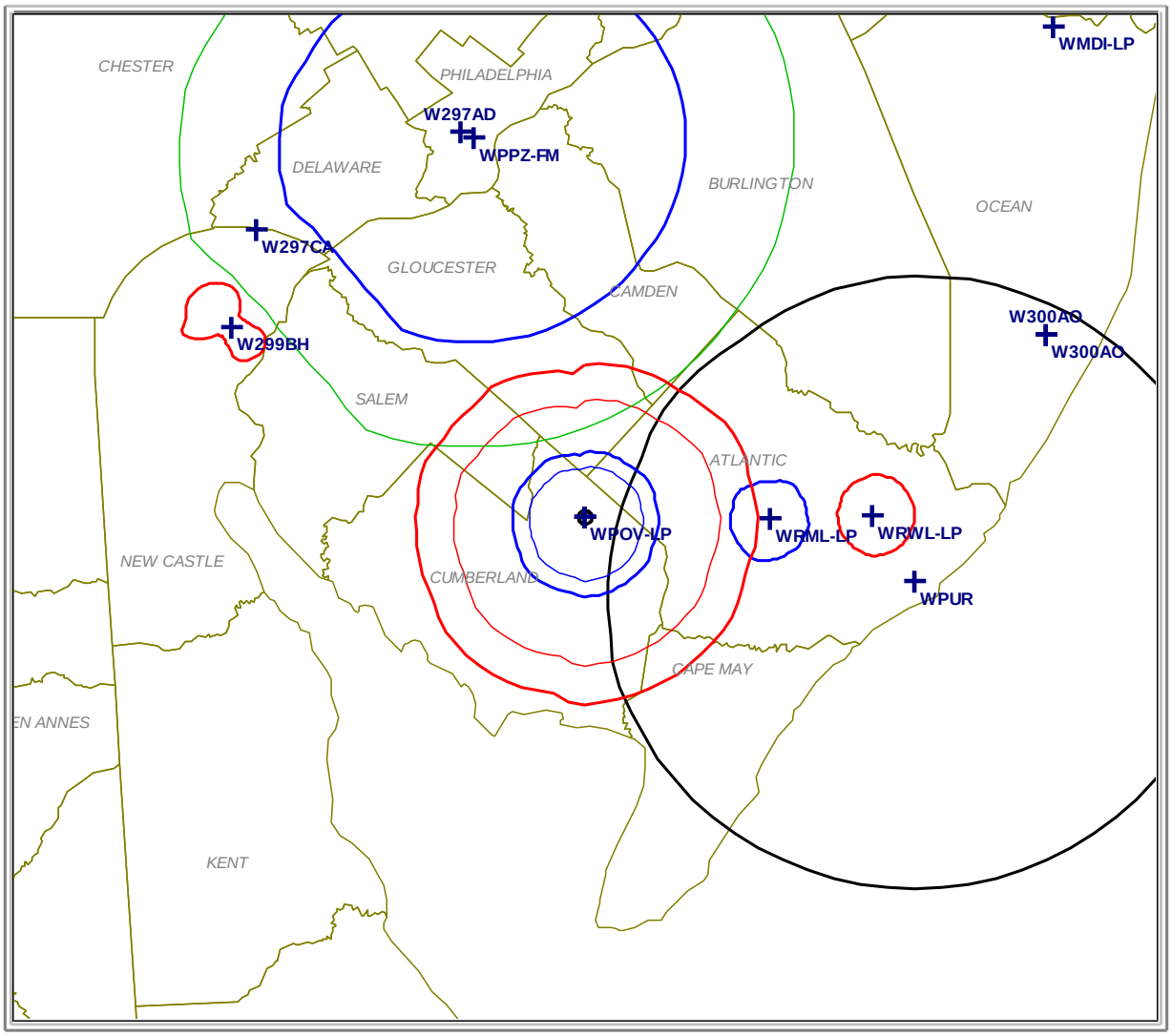


Limited to 160w towards W223CO. Clears all others at 237w.

Map Scale: 1:811412 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WPOV-LP

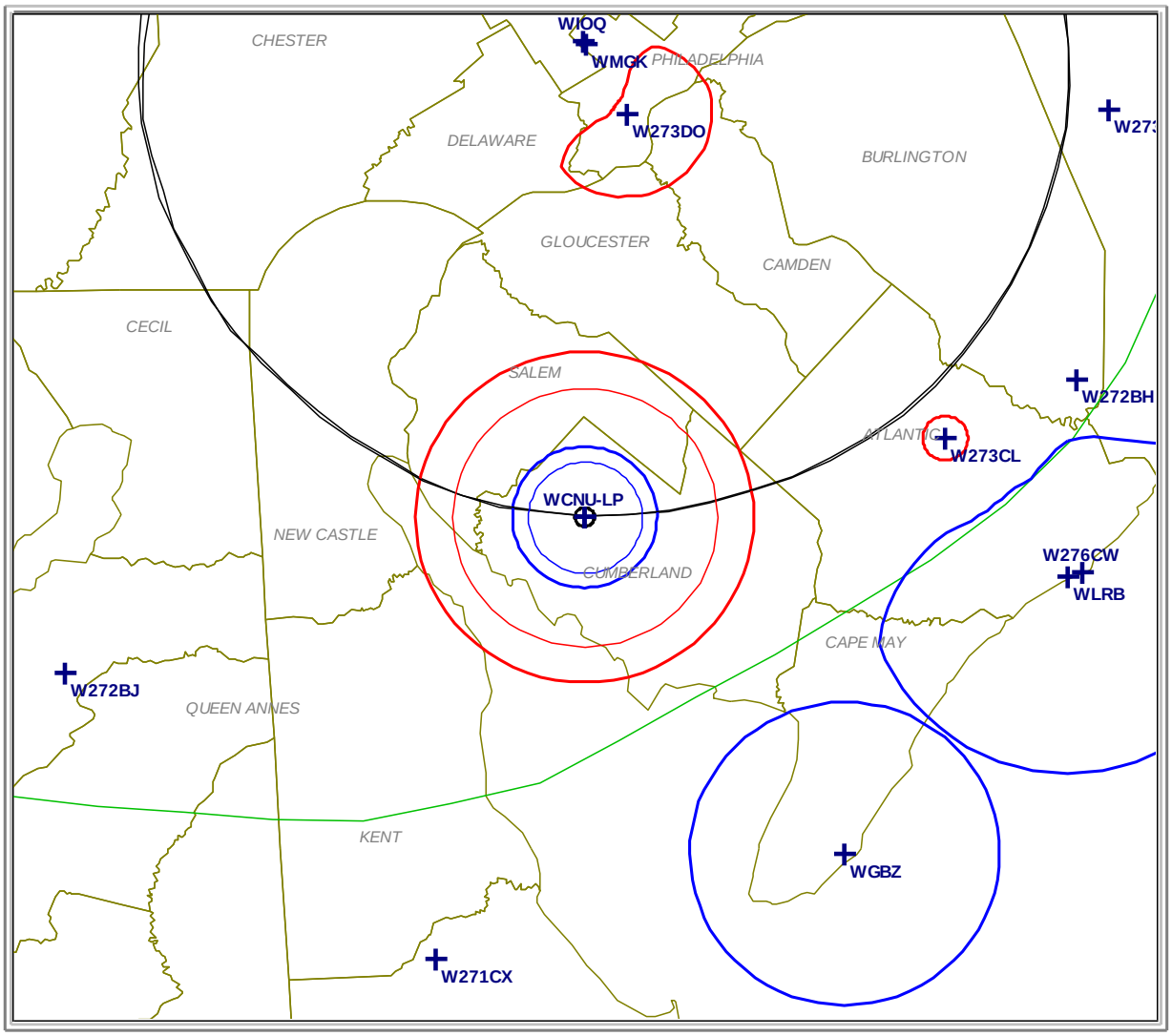


Upgrade to 92w ERP possible.

Map Scale: 1:811412 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WCNU-LP

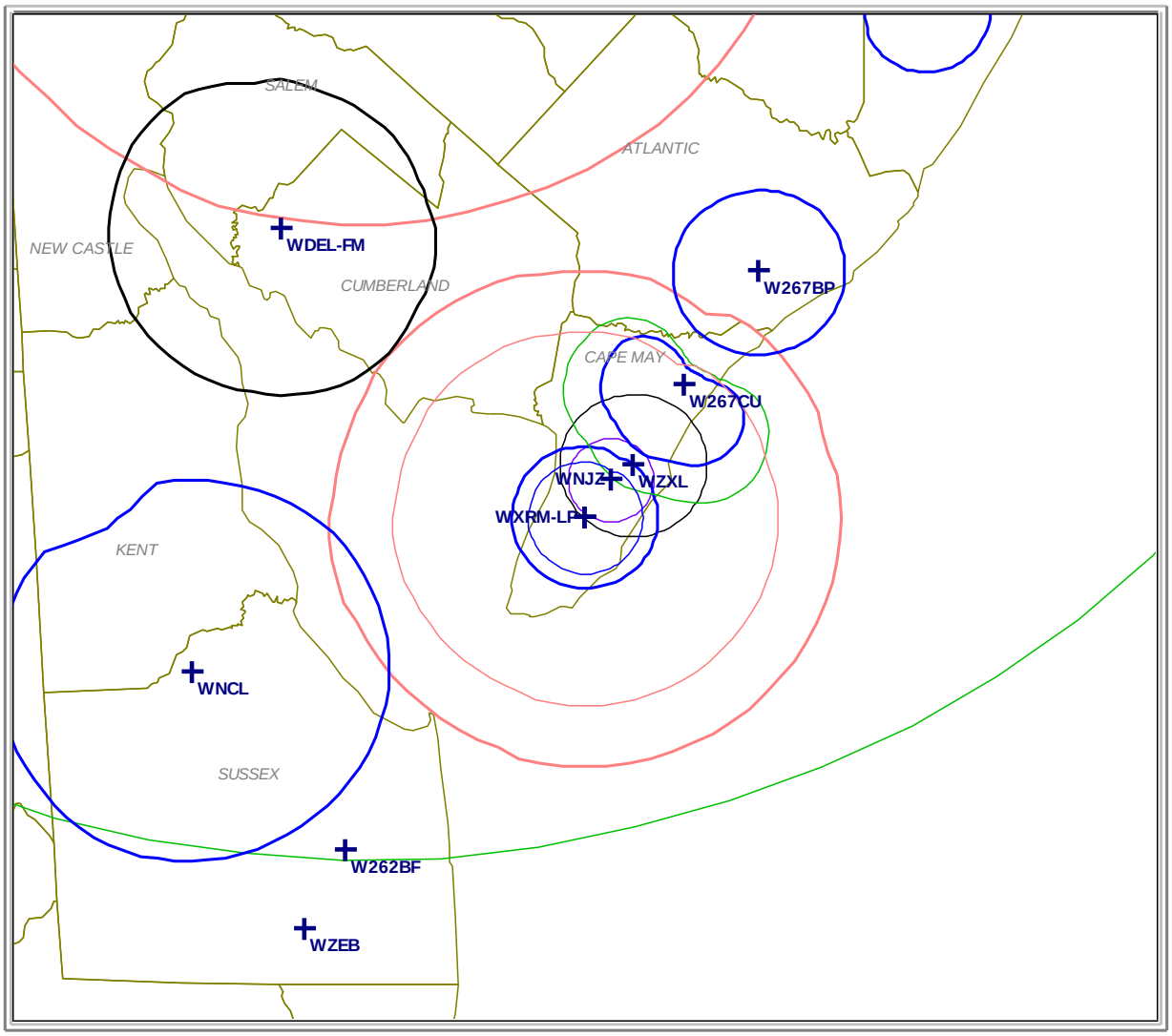


Upgrade may be limited due to WIOQ & WMGK Philadelphia

Map Scale: 1:811408 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WXRM-LP

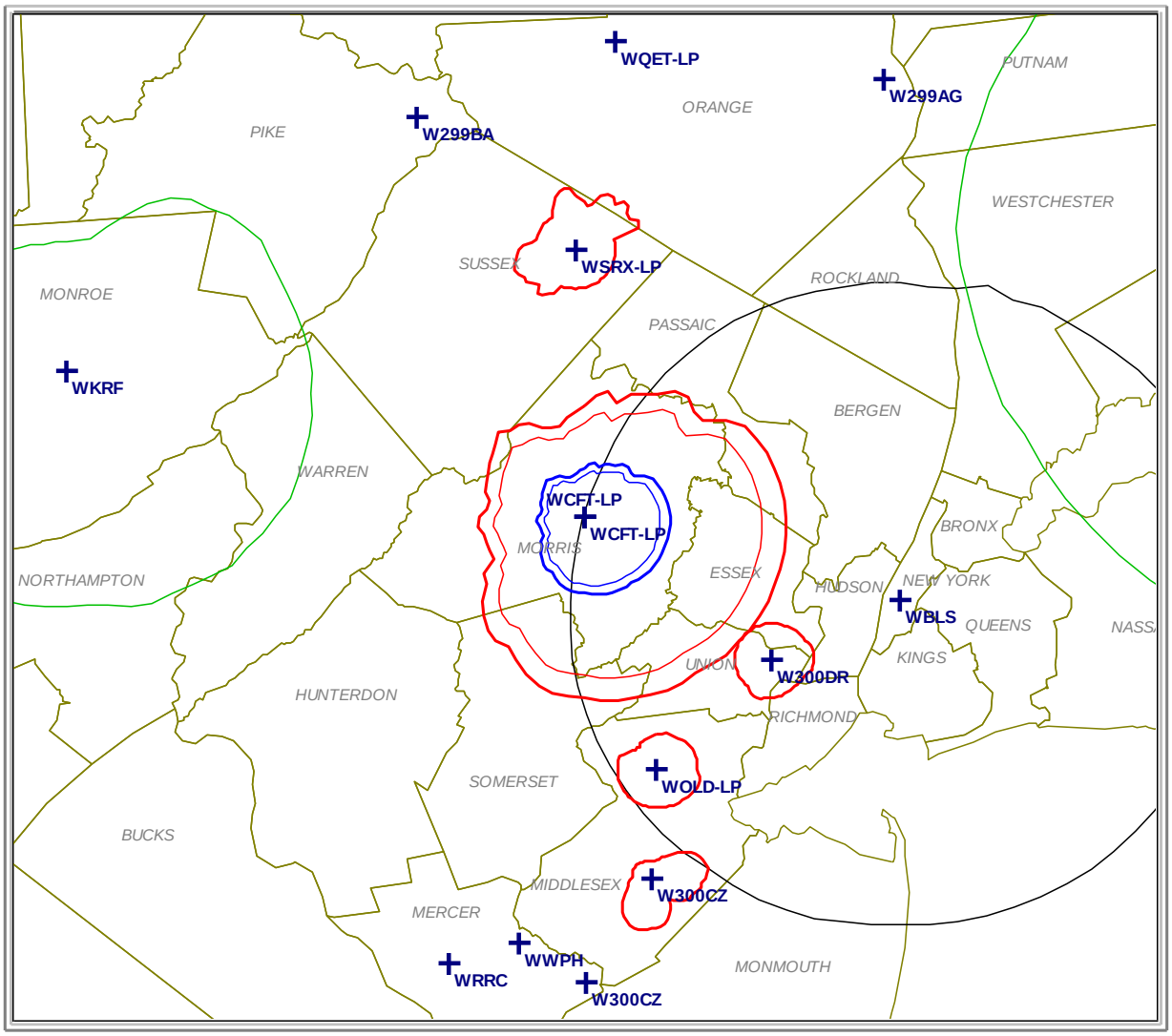


Can upgrade to 212w

Map Scale: 1:811408 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WCFT-LP

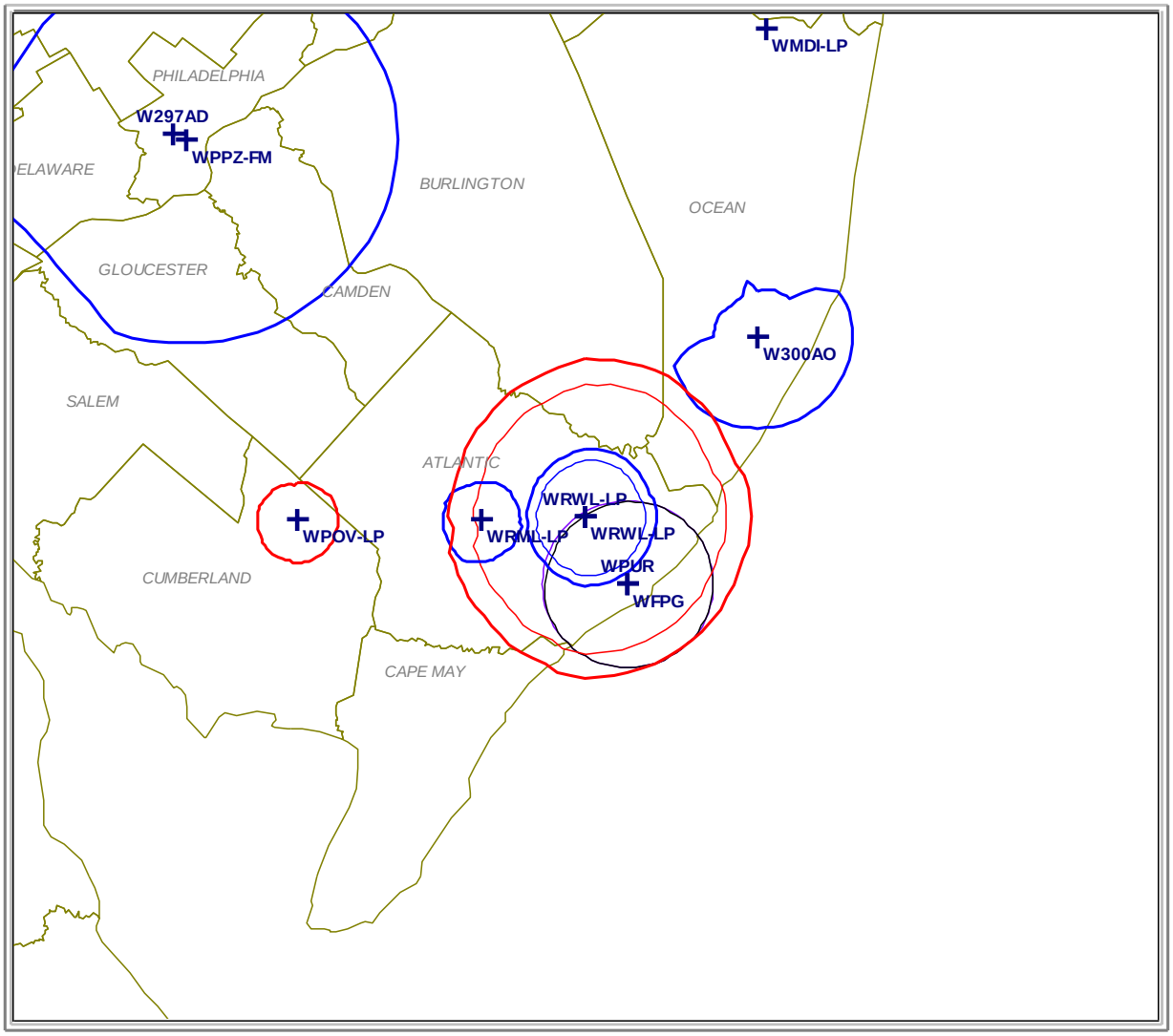


9w upgrade limited to 7w towards W300DR

Map Scale: 1:811408 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WRWL-LP

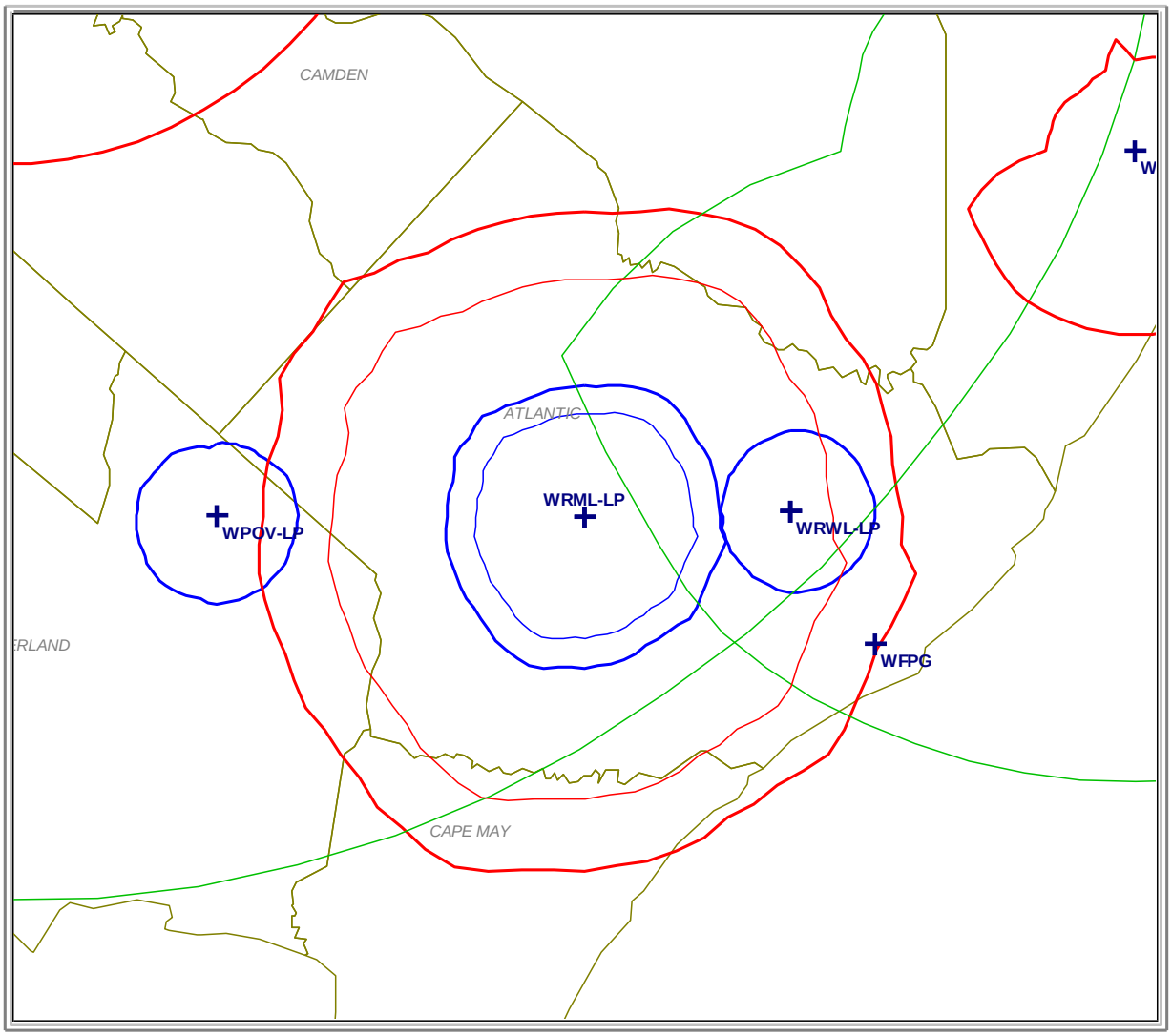


Upgrade limited to 100w due to IF.

Map Scale: 1:811408 1 cm = 8.11 km V|H Size: 144.47 x 160.22 km

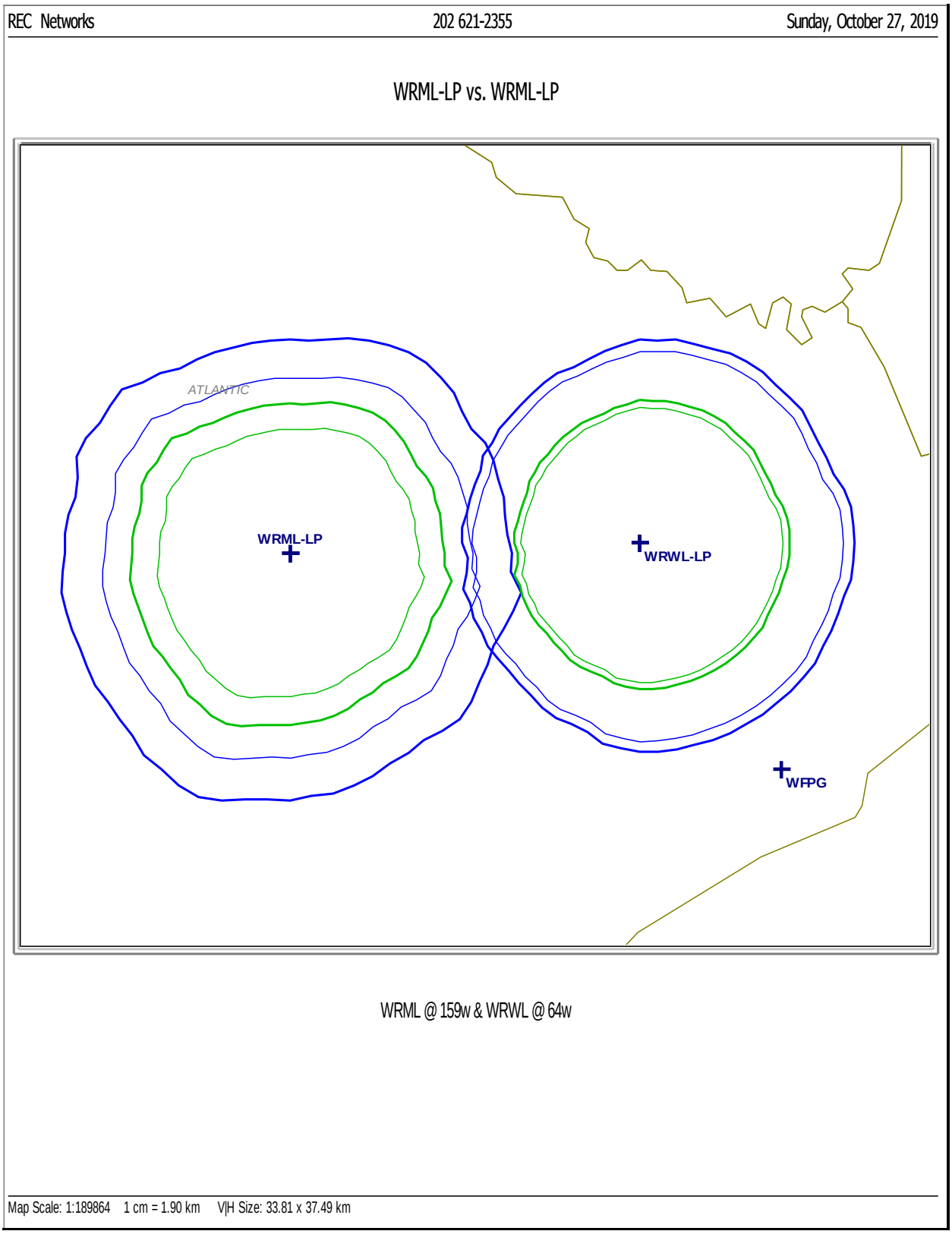
REC Networks 202 621-2355 Sunday, October 27, 2019

WRML-LP



Limited to 185w towards WRWL-LP non-upgrade facility

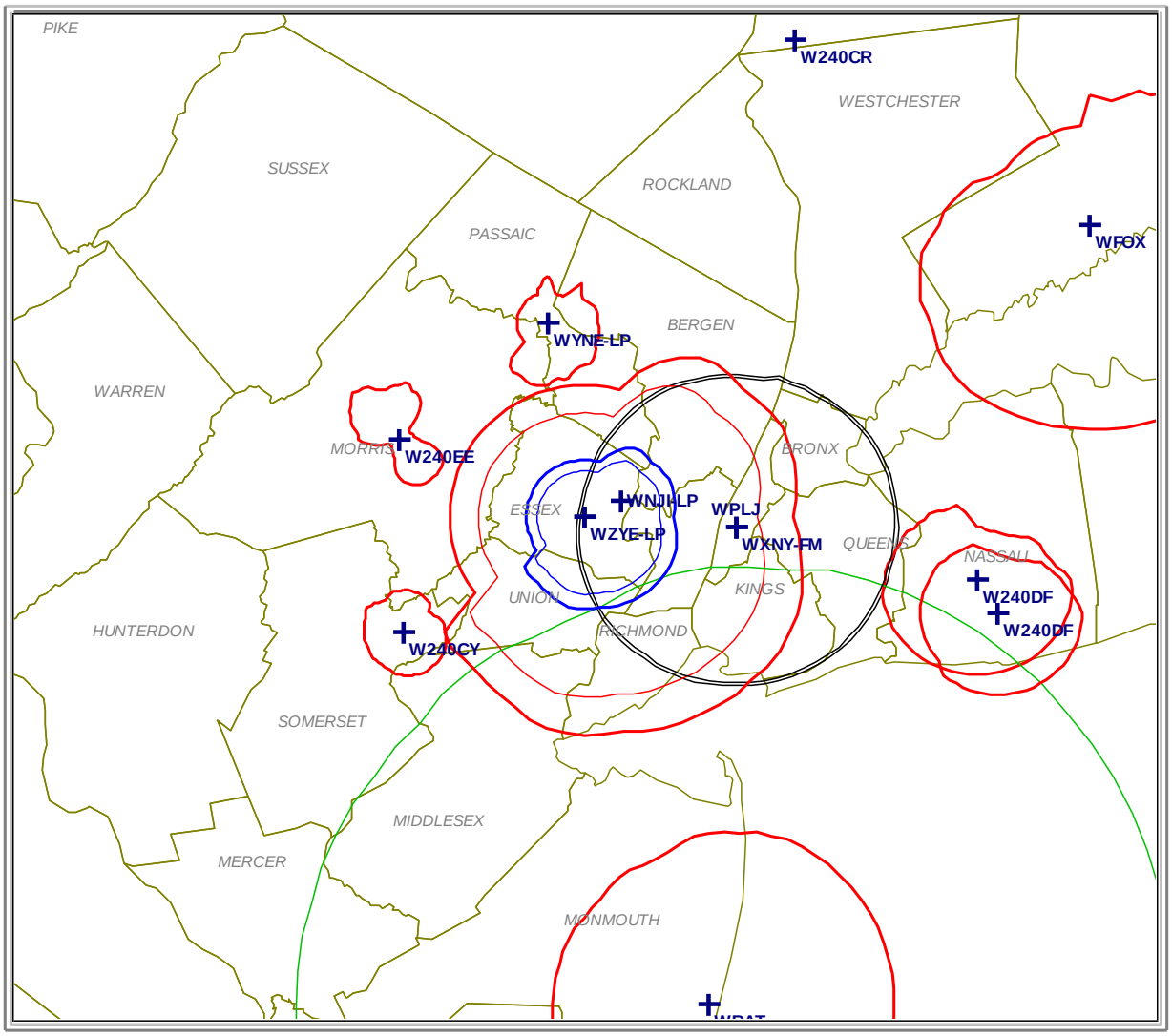
Map Scale: 1:405704 1 cm = 4.06 km V|H Size: 72.24 x 80.11 km



On this map, blue indicates the 54 dBu interfering contour and green is the 60 dBu service contour.

REC Networks 202 621-2355 Sunday, October 27, 2019

WZYE-LP

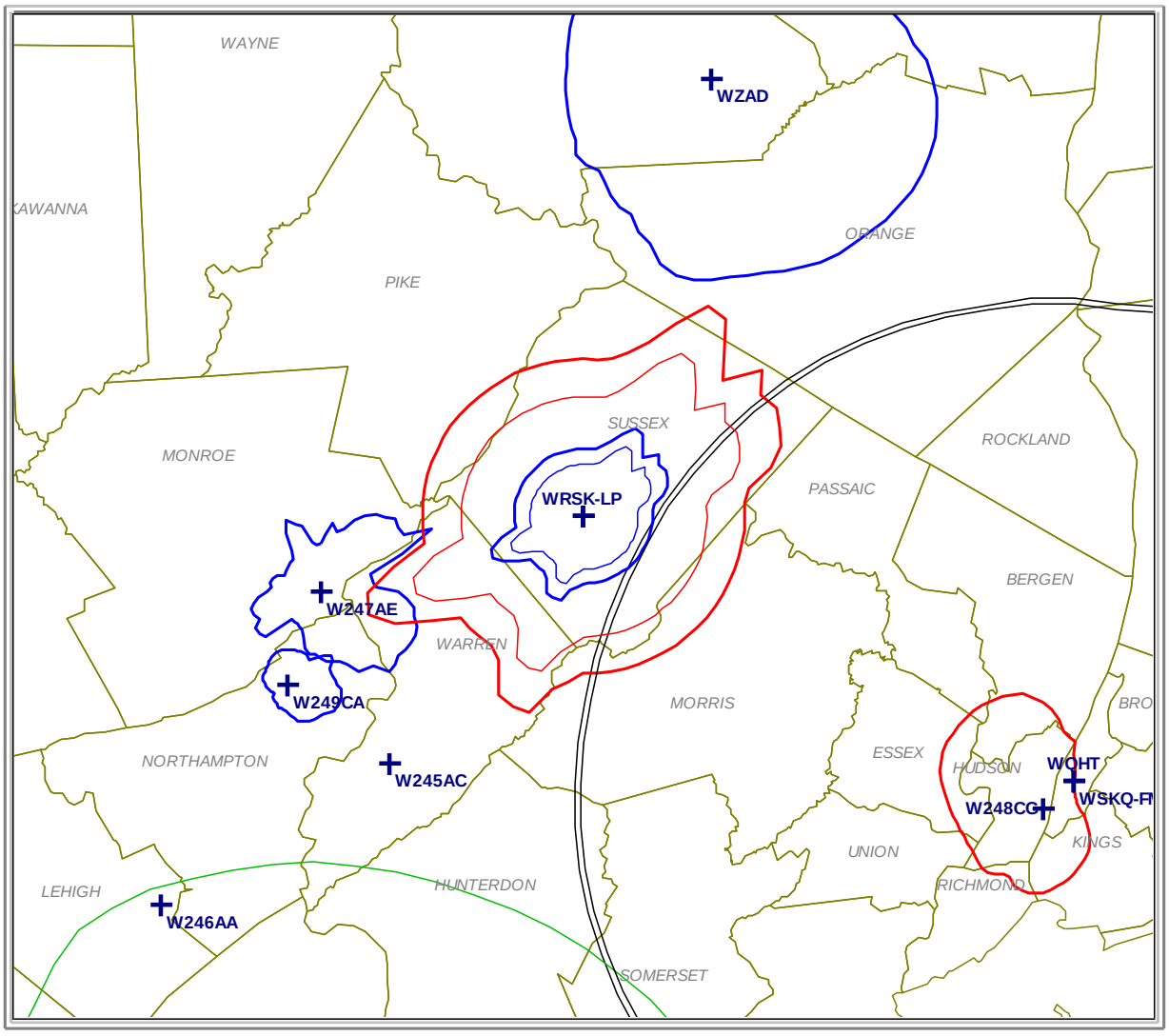


Reduce to 85w to protect W240CY

Map Scale: 1:759456 1 cm = 7.59 km V|H Size: 135.22 x 149.96 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WRSK-LP

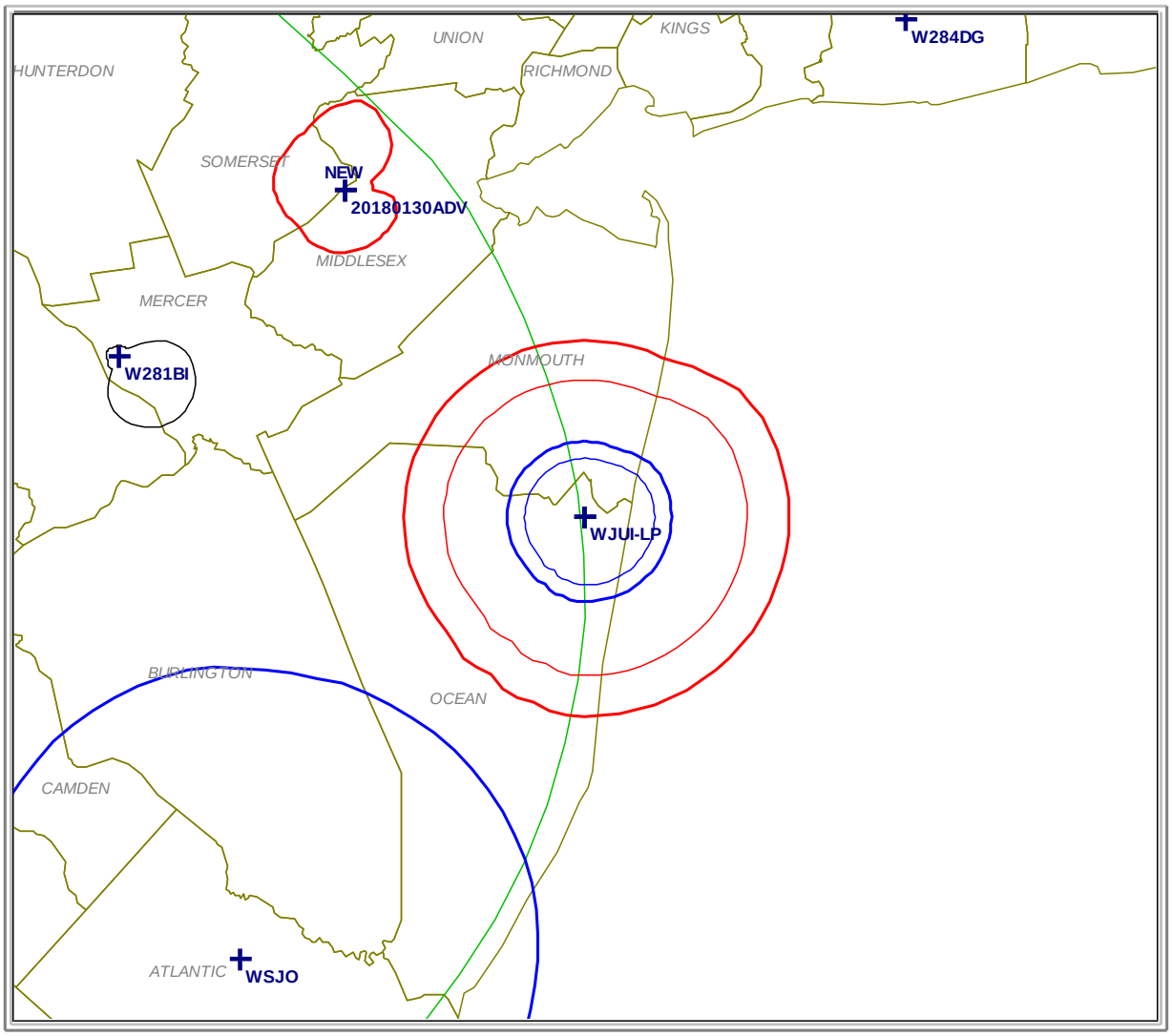


Upgrade to full-potential 162w

Map Scale: 1:759456 1 cm = 7.59 km V|H Size: 135.22 x 149.96 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WJUI-LP

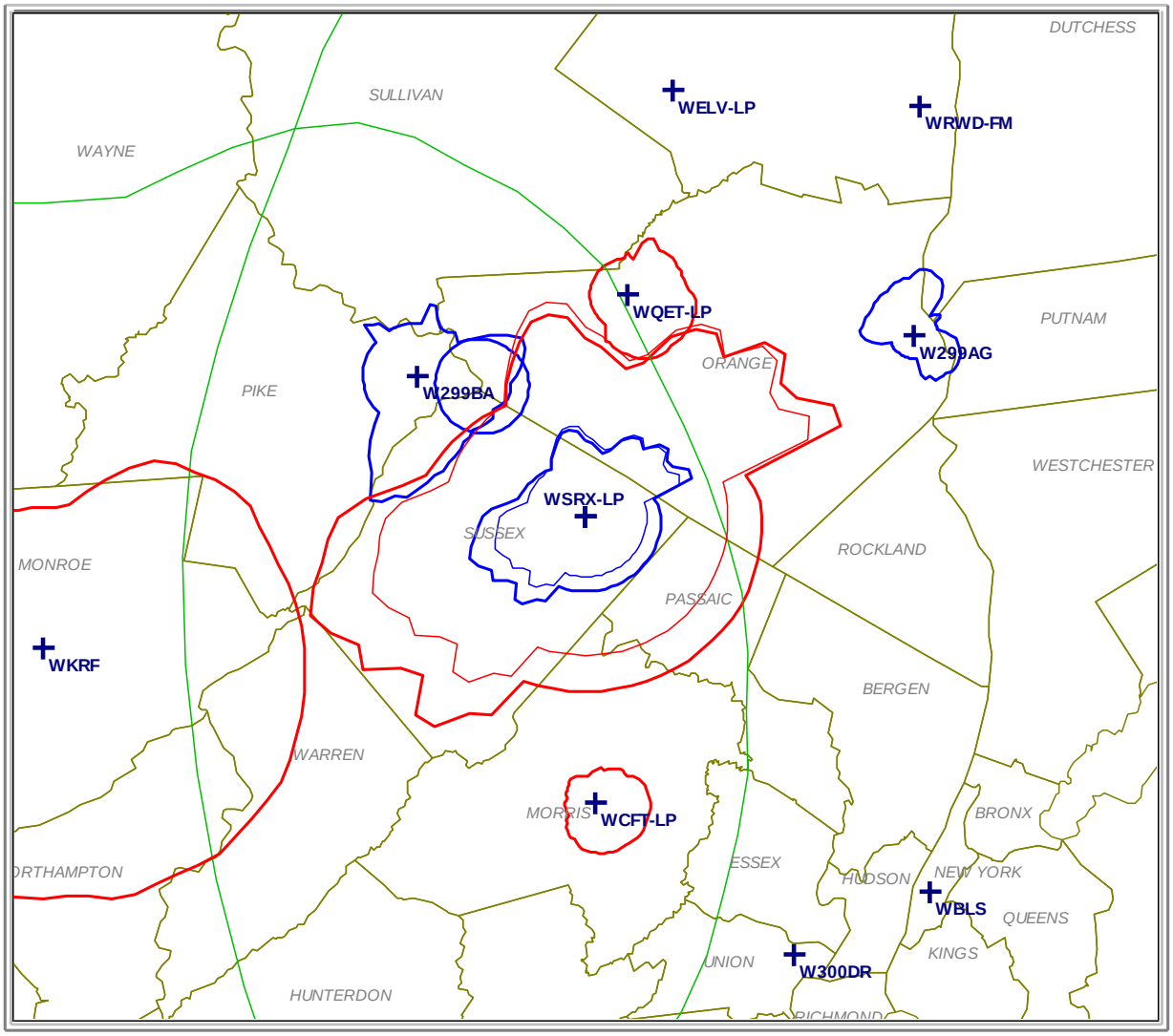


Upgrade to full-potential 250w

Map Scale: 1:759456 1 cm = 7.59 km V|H Size: 135.22 x 149.96 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WSRX-LP

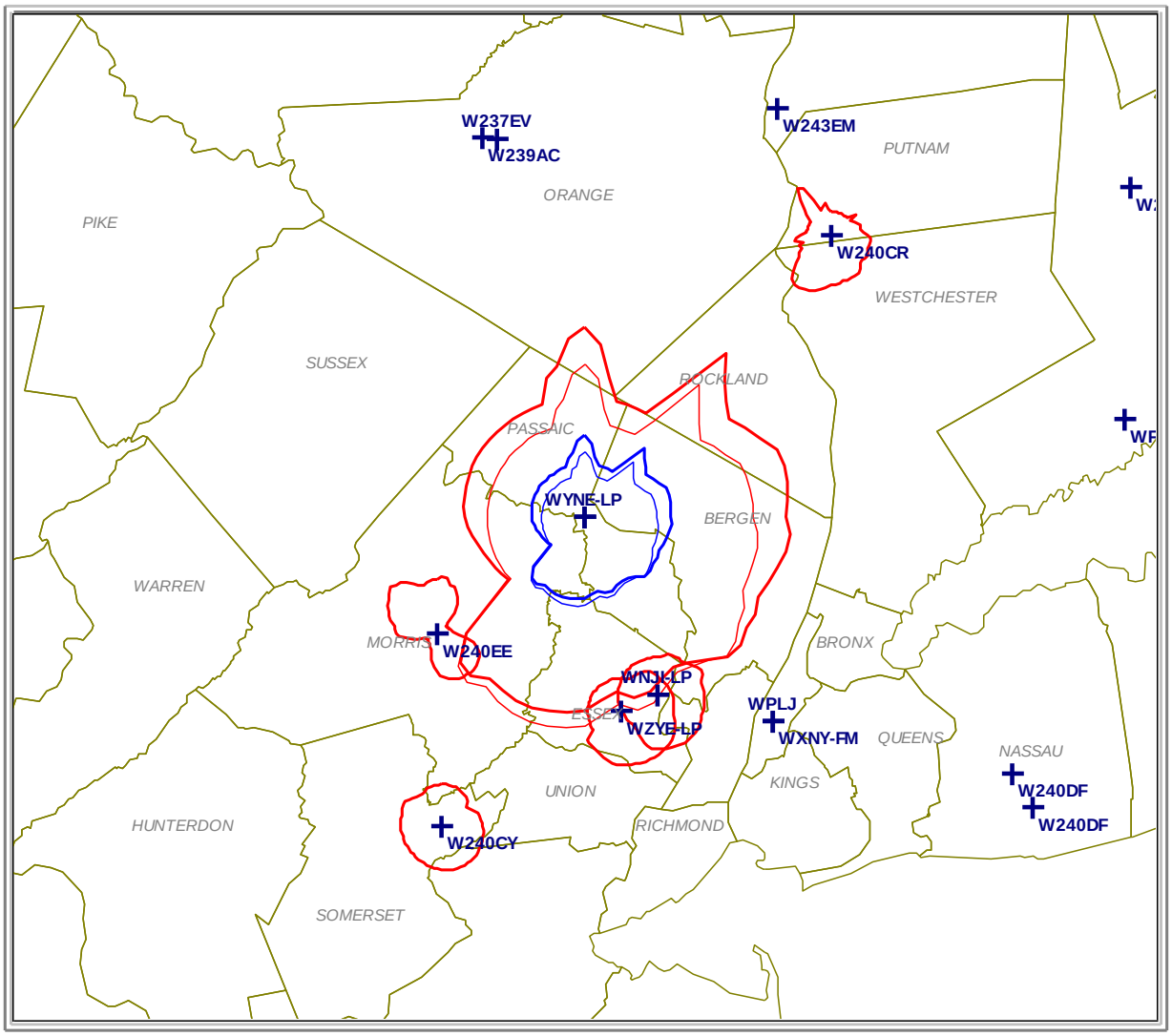


250w - shown with a Nicom BKG-77 (assuming WQET does not upgrade)

Map Scale: 1:759456 1 cm = 7.59 km V|H Size: 135.22 x 149.96 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WYNE-LP

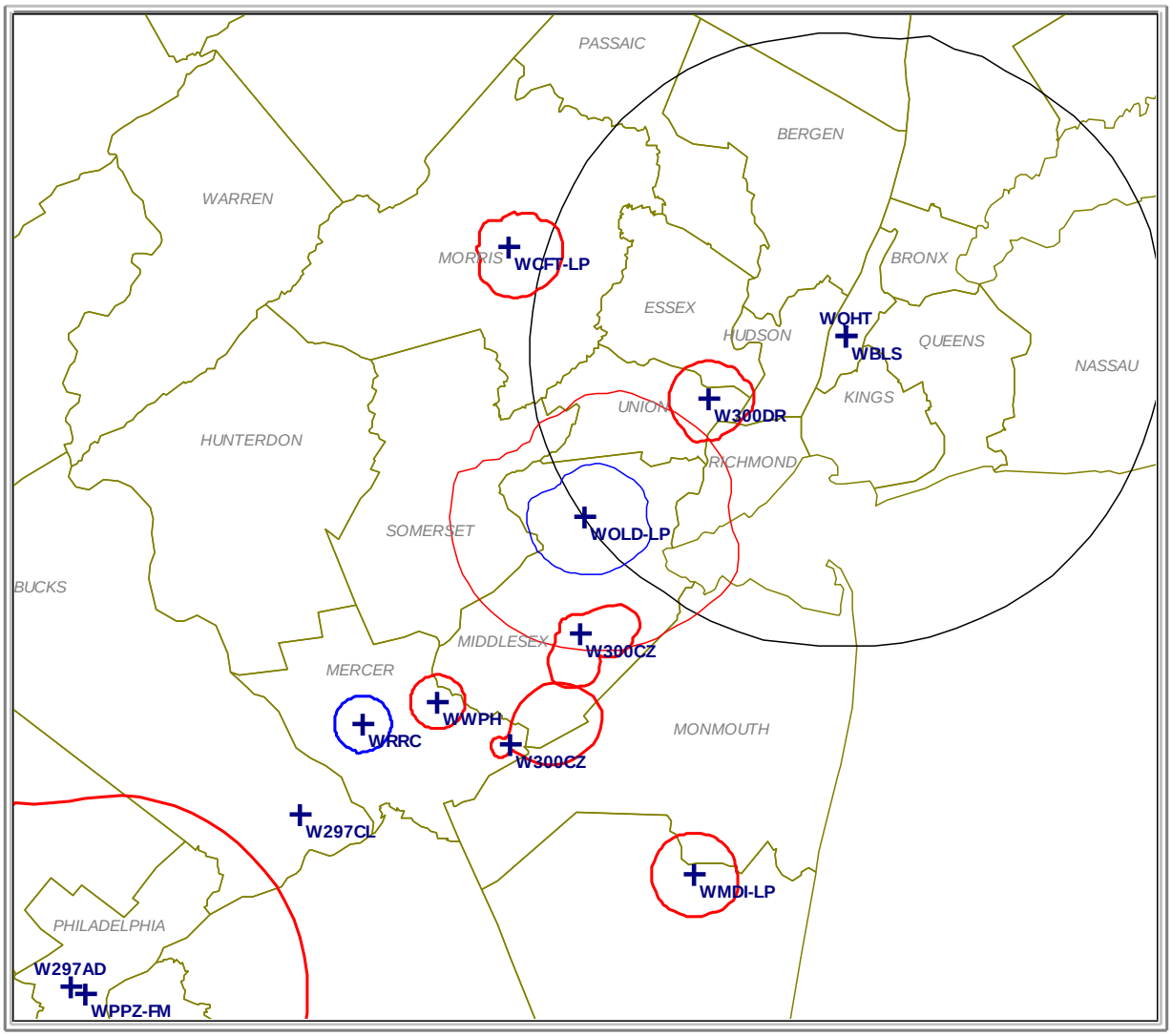


Nicom BKG at rotation 3 degrees @ 65w

Map Scale: 1:759456 1 cm = 7.59 km V|H Size: 135.22 x 149.96 km

REC Networks 202 621-2355 Sunday, October 27, 2019

WOLD-LP



Non-upgraded 43w ERP

Map Scale: 1:759456 1 cm = 7.59 km V|H Size: 135.22 x 149.96 km

APPENDIX E

NEW JERSEY CLASS A FM STATIONS IN THE NON-RESERVED BAND

Channel	Call	Community	kW	HAAT	Contour Size
221A	WVLT	Vineland, NJ	6.000	100	28.3
224A	WOBM-FM	Toms River, NJ	1.600	139	24.3
224A	WOBM(CP)	Toms Rvier, NJ	1.480	144	24.2
226A	WEZW	Wildwood Crest, NJ	4.100	68	21.7
232A	WJLK	Asbury Park, NJ	1.300	152	24.1
232A	WIBG-FM	Avalon, NJ	6.000	91	27.1
240A	WRAT	Point Pleasant, NJ	4.000	73	22.2
241A	WTTH	Margate City, NJ	3.300	87	23.1
252A	WMGQ	New Brunswick, NJ	1.200	158	24.1
252A	WTKU-FM	Petersburg, NJ	6.000	100	28.3
253A	WBBO	Ocean Acres, NJ	3.400	136	28.4
254A	WCZT	Villas, NJ	6.000	89.5	26.8
257A	WZBZ	Pleasantville, NJ	3.000	100	24.2
259A	WBHX	Tuckertown, NJ	5.600	33	16.2
261A	WJRZ-FM	Manahawkin, NJ	1.700	133	24.1
269A	WDEL-FM	Canton, NJ	3.300	91	23.6
272A	WGBZ	Cape May, NJ	6.000	57	21.9
272A	WSUS	Franklin, NJ	0.590	218	23.7
274A	WLRB	Ocean City, NJ	4.100	121.7	28.3
288A	WAIV	Cape May Court House, NJ	3.300	90	23.5
288A	WDHA-FM	Dover, NJ	1.000	175	24.2
292A	WHCY	Blairstown, NJ	0.430	262	24.0
292A	WKMK	Eatontown, NJ	1.100	161	23.8
292A	WJSE	North Cape May, NJ	5.400	105.4	28.3
293A	WTHJ	Bass River Township, NJ	1.450	208	28.4
296A	WWYY	Belvidere, NJ	0.840	266	28.3
296A	WWZY	Long Branch, NJ	5.000	110	28.4
300A	WPPZ-FM	Pennsauken, NJ	0.780	276	28.3

APPENDIX F

LPFM STATIONS IN THE MEXICAN STRIP ZONE

Call	Location	km to border
KISJ-LP	BISBEE, AZ	8
KBRP-LP	BISBEE, AZ	12
KPYU-LP	OLD PASCUA VILLAGE, AZ	97
KPUP-LP	PATAGONIA, AZ	25
KWAK-LP	SAN XAVIER, AZ	80
KJDB-LP	SIERRA VISTA, AZ	24
KPYT-LP	TUCSON, AZ	81
KWXL-LP	TUCSON, AZ	91
KVAN-LP	TUCSON, AZ	93
KCDS-LP	TUCSON, AZ	95
KTDT-LP	TUCSON, AZ	95
KMKR-LP	TUCSON, AZ	95
KYVD-LP	YUMA, AZ	12
KRHY-LP	YUMA, AZ	6
KRLY-LP	ALPINE, CA	32
KOYT-LP	ANZA, CA	110
KWXZ-LP	COACHELLA, CA	118
KCJP-LP	EL CENTRO, CA	15
KYFC-LP	EL CENTRO, CA	15
KXFB-LP	FALLBROOK, CA	93
KAJI-LP	PALM DESERT, CA	119
KVIB-LP	SAN DIEGO, CA	22
KCZP-LP	SAN DIEGO, CA	21
KPTL-LP	TEMECULA, CA	107
KUAV-LP	WINTERHAVEN, CA	13
KWIV-LP	DEMING, NM	53
KTAL-LP	LAS CRUCES, NM	58
KKSC-LP	SILVER CITY, NM	107
KXIQ-LP	BROWNSVILLE, TX	3
KRBS-LP	BROWNSVILLE, TX	1
KVCZ-LP	BROWNSVILLE, TX	4
KBNH-LP	BROWNSVILLE, TX	5
KZQB-LP	BROWNSVILLE, TX	4
KHIA-LP	BRUNDAGE, TX	62
KJLC-LP	CRYSTAL CITY, TX	53
KYEP-LP	EAGLE PASS, TX	1
KJAP-LP	EDINBURG, TX	26
KRRH-LP	EDINBURG, TX	26
KAWU-LP	EL PASO, TX	5
KPJU-LP	EL PASO, TX	3
KHQR-LP	HARLENGEN, TX	17
KULD-LP	LAREDO, TX	5
KLDU-LP	LAREDO, TX	3
KMKB-LP	MARFA, TX	66
KGDQ-LP	MC ALLEN, TX	10
KCZN-LP	MC ALLEN, TX	12
KFCC-LP	MISSION, TX	4
KVHJ-LP	MISSION, TX	2
KZOA-LP	MISSION, TX	5
KCYP-LP	MISSION, TX	21
KPDW-LP	PHARR, TX	12
KRVT-LP	RANCHO VIEJO, TX	8
KSGS-LP	RIO GRANDE CITY, TX	2
KCCP-LP	SOUTH PADRE ISLAND, TX	12
KEWT-LP	WESALCO, TX	14
KWJV-LP	WESALCO, TX	11
KUEH-LP	YSELTA DEL SUR PUEBL, TX	1
KZLH-LP	ZAPATA, TX	1

APPENDIX G

STANDARD ANTENNA PATTERNS IN CDBS

Antenna Make	Model	Service	Antenna Id
AC	DR-1	FM	13396
KAT	750112	FM	13417
KAT	754154	FM	13419
KAT	CL-FMRX	FM	13383
KAT	K5231187	FM	13420
SCA	2CA5-150H	FM	16103
SCA	2CA5-150VH	FM	16105
SCA	2CA5-FMVH	FM	16107
SCA	2CL-FMV	FM	16109
SCA	2HDCA-10H	FM	16112
SCA	2HDCA-10HV	FM	16114
SCA	2HDCA-5EBV	FM	16116
SCA	4CA-2CP	FM	16117
SCA	4CA5-150EB/CP	FM	16118
SCA	4CA5-150EBV	FM	16119
SCA	4CL-FM	FM	16120
SCA	4HDCA-5CP	FM	16121
SCA	4HDCA-5EBV	FM	16122
SCA	4HDCA-5H	FM	16123
SCA	CA-2H	FM	16129
SCA	CA-2V	FM	16130
SCA	CA-4	FM	16131
SCA	CA-FM	FM	16136
SCA	CA2	FM	16124
SCA	CA2-CP	FM	16125
SCA	CA5-150/CP	FM	16139
SCA	CA5-150C	FM	16141
SCA	CA5-150EB/CPH	FM	16143
SCA	CA5-150H	FM	16146
SCA	CA5-150V	FM	16147
SCA	CA5-FM/CP/RM	FM	16149
SCA	CL-FM	FM	16150
SCA	CL-FM(V)	FM	16151

SCA	CL-FMHR	FM	16153
SCA	CL-FMHV	FM	16154
SCA	CL-FMV	FM	16155
SCA	CL-FMVH	FM	16156
SCA	CL-FMVR	FM	16157
SCA	FMO	FM	16161
SCA	FMV	FM	31326
SCA	FMV-2VV	FM	16164
SCA	FMVMP	FM	61047
SCA	HDCA-10EB	FM	16172
SCA	HDCA-10H	FM	16173
SCA	HDCA-10V	FM	16174
SCA	HDCA-5CP	FM	16176
SCA	HDCA-5EB	FM	16177
SCA	HDCA-5EB/CP	FM	16178
SCA	HDCA-5H	FM	16179
SCA	HDCA-5V	FM	16180
SIT	MA5-1-FM	FM	16195